

CAPACITY CONSTRAINTS, AGGREGATE DEMAND AND DIFFERENTIAL PATTERNS OF ECONOMIC ACTIVATION AND GROWTH

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(revised version for the "General Meeting" of the Cross-national Architecture for Labor Market Statistics Project (Bellagio, September 2002))

Introduction

I understand that the main objective assigned to our team work is to be centered on concepts and measurements of a labor supply potential, as a possible limiting factor for capacity and activation of an economic system in a moment of time, and then for monetary stability and real growth prospects over time.

The reflections on “capacity” concepts, on which I have been discontinuously applying myself in a recent period, do not specifically refer to a limit to a supply potential exclusively arising from the side of availability and intensity of use of labor, and I understand that the considerations, that I will develop briefly here below, might appear as somewhat marginal respect to the main tasks assigned to the group engaged on the front of efforts at definition of measurable concepts..

Nevertheless, a short paper, which aims essentially at drafting a summary from other works of mine, in which concepts and references to the literature are more widely framed, is being proposed to your attention for this occasion. It is my hope that with emendements and integrations, possibly suggested from the participants to the Project, the approach here outlined might be considered of interest as a collateral reflection on topics which are nevertheless central within the wider finalities of the research project.

The points of departure of my earlier reflections, rather than on straightforward concepts of capacity, were addressed on critical assessments of a “supply-side-dominated” approaches, prevailing within the macroeconomic theories of the longer-run growth performance of the economy, or within aggregative representations of a labor market outcomes in the “Nairuvian” models or similar. My intention was not, however, to join an already crowded forum of growth theory or “Nairu” controversies”, through a critical consideration on robustness and generality of the empirical findings, although reconsiderations of of theoretical setting and empirical validation on these field appear as particularly needed in these periods of cyclical volatility.. My line of research, briefly summarized for the occasion, aims rather at stressing the joint relevance of demand side and supply side evolutions of parameters and policy, in order to be able to interpret in a less unilateral or simplified fashion the differential performance, in growth and employment activation, of the economic systems across countries and over periods of time. The line of reasoning is below presented within a general and simple macroeconomic setting, although the reflections, implicitly, are inspired bt the recent strutural and cyclical vicissitudes of the greater developed economic area, and in particular of the triad USA, EU, and Japan.

Supply, Demand and the Growth Path in a “neo-Domarian” setting

The relevance of demand-side factors has been increasingly confined, within a “mainstream* macroeconomic orientation, into a role of cause for short-run shocks and perturbations, in the neighbourhood of some equilibrium, or “natural” outcome (of the steady growth rate, of equilibrium (frictional) unemployment, etc.) which were derived from the “supply-side” fundamentals. Only withiin a nowadays minoritarian viewpoints of followers of a Keynesian tradition we might find assertions where demand side parameters and behaviors may possibly constrain the activation of an economy below its potential, and not only in“out of equilibrium” states in a short run where flexible adjustments of prices and wages, etc., are not admitted. . It is not however my intention to revisit here the arguments of some “post-keynesian” controversy. I will rather seek support, for initializing my point, in a quotation from an elder master of a mainstream erudition::

“ At short term scales, I think, something sort of “Keynesian” is a good approximation, and surely better than anything straight neoclassical. At very long scales, the interesting questions are best studied in a neoclassical framework..... At the five to ten years time scale, we have to piece things together as best as we can, and look for an hybrid model that will do the job”.(Solow 2000).*

Everyone is eventually concerned, I believe, about some “medium-term”, as reference period for the evaluation of macroeconomic performances and policies, beyond any possible modelling of “steady states” growth paths or descriptions of the conjunctural condition of the economy over a short horizon. With this broad time reference in mind, I will limit myself for the occasion to a concise presentation of a simple framework for describing the interaction between “capacity” (supply-side) and “activation” (demand-side) factors which is referred here to as a “ neo-Domarian” approach. I refer to previous papers for a more adequate references to an older and newer literature and on this point. (Piacentini 2000, 2001).

In the most simple version of the scheme summarized here below, labor input, “L”, is, not explicitly introduced; however, the model can, however, be quite straightforwardly complemented to allow its explicitation (either through some Cobb-Douglas type of specification for the supply-side, or the consideration of a full utilization level, L^* for labor input, which becomes the binding factor of capacity constraint).

Keeping, at least for the moment, the formulation as simple as possible, we describe through the the following two equations:

$$Y^S = A K$$

$$Y^D = m (I + Z)$$

* Solow,R.M., “Towards a Macroeconomics of the Medium-run”, *Journal of Economic Perspectives*, Winter 2000, p.158.

respectively for the capacity output and the aggregate demand. The equilibrium “locus”, of what is here defined as “balanced Domar path”, where additions to potential output capacity brought forth by the investment process are exactly matched by its direct and indirect (“multiplier”) effects of a demand expansion, is simply obtained by equalizing:

$$AK = m (I + Z)$$

$$A = m (I/K + Z/K) = m (g + zA)$$

$$A = \frac{m}{1 - mz} g$$

where :

$g = I/K$: rate of accumulation;

$z = Z/Y$: share of other autonomous demand (public expenditure, net export) on output;

A : index of total factor productivity or of a “technological capability”;

$m =$: “Keynesian” demand multiplier, which can be specified in a lesser or greater detail, e.g. through inclusion of differential consumption propensities out of wages and profits, incidence of taxation, etc.

Graph 1 describes the “Domar” equilibrium locus as a straight line on a (A , g) quadrant; points above the line will positions characterized by an excess supply, that is a demand-constrained outcome for the economy; below the line, a situation of excess demand and potential inflationary condition.⁺

A test for actual relevance of this simple scheme, as a tool for interpretation of recent real world experiences, might require an attempt at collecting and comparing the relevant quantitative parameters, rates of accumulation, factor productivity, saving propensities, etc. The work, on this point, is only at a preliminary stage. Allow me, therefore, to go here through some intuitive and

⁺ The main structure will not be much affected by introduction of labor in a constant return to scale Cobb-Douglas representation for supply; the equilibrium locus shifts in this case for different values of a capital/labor ratio.

unrigorous description and consideration, reflecting on the experiences of the 1990's of the greater economies of the developed world.

In what follows I will approximate, assuming implicitly an hypothesis of a stable value for a capital/output ratio within a medium-term horizon, and thus identifying, with the "g" on the horizontal axis, also the rate of growth of the output/income of the economy. I am inviting to associate intuitively to three positions on the graph the corresponding three stylized evolution of an economy:

- a) high level (and increases) of a technological capability parameter "A", together with a high propensity to consume on the demand side (with a low inclination of the equilibrium locus) would result in a high and steady value of the growth rate; however, high consumption propensity might involve the risk of slipping into the "excess demand" region; inflationary risks might be checked in this case, not only by a good performance of factor productivity, but also through net imports covering a domestic demand-supply gap, (this would lower the inclination of the balanced path, if we consider an open market multiplier);
- b) a lower value for technological capability on the vertical axis, together with a policy priority given to stabilization programmes targeted to the reduction of deficit and debt of a public sector, would imply lower values for the "z" parameter with the equilibrium locus declining to the right. We might add, to this, the effects of "income policies" pursued in order to reinforce disinflation, which, have often allowed nominal wage increases only in the measure of some "target" rate of inflation; with productivity increases not being followed by real wages, this would imply a declining trend for the share of labor on income with a possible negative "Kaldorian" effect on average propensity to consume. Lower "A" and a lower inclination of the locus would result in a lower rate of "warranted" growth, and/or in the likelihood of falling into the region of excess-supply; with a possible "export-dependence" as a relief for compensations to a deficit of domestic demand;
- c) an economy that might once have experienced a period of "overaccumulation" followed by a "debt-deflation" of real and financial assets, and where a high propensity to save of the population might imply a low value for the multiplier, may be found to suffer from a situation of chronicizing excess of potential output

on demand, and shrinking investment, feeding each other in some pattern reminiscent of a Harrodian negative cumulative process.

The reference to experiences in the US, EU and Japan for the above three “stylized situations” is obviously incidental.

Capacity constraints and the multi-dimensional notion of the labor supply

Now, we try to develop some preliminary consideration, on how to complement the basic scheme so far outlined with the notions of a possible labor supply constraint and, more in general, with considerations referable to the differential evolutions and institutional characteristics of the national labor markets.

If we admit an upper limit, say L^* , for a capacity of mobilization and use of the labor force available to the economy in any moment, of course this would become the relevant constraint for activation and growth of the system. Including a labor supply limit through some complication of the basic graph of supply/demand interaction is possible (a sketch is attached as fig. 1bis).. But we surely know, and other papers prepared within the Research Group have provided much quantitative evidence on this point, that any notion of a degree of utilization of a capacity labor supply, and its possible limits, must be considered as a product of a pluridimensional combination of stocks and flows: activity and employment rates given population in working age, composition among full-time and part-time employees, and the average length of a work-week (9 or year). The contribution to this research project by J. Freyssinet, besides, cleverly illustrates how notions of “full-utilization” of a potential pool of labor may vary, according to the state of the economy and the reference paradigms of the policy operators in the historical circumstances.

Rather than insisting on minor, formal, refinements of the scheme which would allow an expliciting of a labor variable in the simple model, I would like to take this occasion for encouraging a discussion on the comparative patterns of the labor use in different industrialized countries, through the presentation and

comment of some tables which are coherent with the the decomposition algorithms illustrated in another paper within the work group; and for whose elaboration I must be grateful to friends in the Research Department of ISTAT (Italian National Institute of Statistics) with whom I have been sometimes associated in joint research programs.

The paper adds, to what has also been considered in other contributions within the research project, the estimates of hourly productivity of labor (average product per work-hour) in order to draw comparative indexes for a GDP pro-capita (in PPS) for a group of countries as the result of the multiplication of component indexes referred to productivity and utilization of the labor pool (hours of work, employment rate, potential labor supply as share of the population in the working age). The results of the exercise are summarized in the Tables A and B in the Appendix, respectively, for absolute values in 1991, 95 and 2000, and for the growth rate of pro-capita GDP over the period 1991-2000.

In order to ease comparison, the GDP pro-capita are reported, in the first table, in terms of index numbers, relatively at 100 for its average value for the European Union.

Several interesting patterns emerge from the comparative investigation of the data. Consider, for example, the differential in the growth rate of pro-capita GDP between USA and EU15 over the decade 1991-2000, which amounts to one percentage point in terms of an average yearly rate of growth, as from Table 2. An analysis for component factors of would reveal that much of this differential performance should be attributed to the growth rate of the working hours in the year, which has increased at 0.8% per year in the USA as against only 0.1% in the EU. Average yearly growth rates of productivity, on the other hand, show only marginal differences between US, EU and Japan. The hours dimension, overall, shows itself as the more flexible element in the variability of total input of labor contribution to output.

On the other hand, it may be noticed that similar values for the GDP index may result from a variable composition of the labor use and the of employment

rates and productivity mix. The four greater states within the European Union, in year 2000, seem to show a relative “convergence” with indexes of the pro-capita GDP not so far apart: 127.3 for Germany, 123.6 for Italy, 122.7 for UK, 119.8 for France. Italy and UK, for example, would have been characterized at the end of the century by very near values of an indicator of real income per head of population, but the patterns of labor use in these two countries appear to us as very different. The gap in employment rate was, in fact, very relevant, with Italy employing only 59.7% of its population in the working age, as against 72.4% of the United Kingdom. Italy seems to compensate this shortage in labor participation through a higher value of its average productivity (index 170.0 against 136.8 for UK). These findings might be rationalized in terms of structural characteristics of the labor market and the productivity texture, but further, detailed investigations would be required to justify the differentials at level of national averages. One main point, explaining part of the reversed gradatory of employment rates and productivity in this particular case, is surely represented by the differences in the diffusion of, particularly female, part time work in the two countries.. Different sectoral compositions of the GDP of the economies also certainly matter (E.G. UK has relatively a higher share of service sectors on total product) ; eventually, the extension of an “irregular” labor market in Italy, whose contribution are partially estimated for purposes of GDP calculations but where workers are not accounted in the official employment data, might also account for part of the result. However, the case has been commented, essentially, as an indicative example of how national patterns of use of a labor potential may differ. The role of traditions and regulations and their influence on participation rates, the historically conditioned forms of a ‘social division of labor”, may be called for, and would refer to a greater detail in the analysis of local specificities.

Conclusive remarks

Should we conclude from these very preliminary survey that each “national” labor market should be analyzed in its own institutional features, laying behind the differential composition of stock and flow use of a labor capacity potential ? In that case, notions of being more or less distant from some level of “full” capacity

use of this potential would become a relative notion, at least in a moment of time in which each country is characterized and constrained from its peculiar feature and history of “repartition” of total labor input. I believe that case studies and more in depth analyses of the differential patterns should be welcomed as further developments of a research trajectory. However, I believe that, the collection and the international comparisons of average macroeconomic outcomes, as a result also of composition effects of employment and hours patterns, as pursued within the contributions of this research project already might disclose relevant results which are worth being diffused to a public of economic analysts and policy operators. These in fact have been, in the recent years, sometimes reluctant to widen the range of their quantitative perception and of modelling of the aggregate labor market from a limited , conventional set of indicators and concepts (e.g. the standardized unemployment rate, the “NAIRU”, etc.), to which perhaps an excessive implication, in terms of tools for policy guidance, has also been attached. The instability of some fundamental relationship of the macroeconomy, such as that between output and employment growth (i.e. cyclical employment/output elasticity), or between the unemployment rate and the inflationary pressures in the economy, as we have witnessed, with reference to several national experiences in the recent years, are also to be explained, in my opinion, through this evidence of a relevant margin of flexibility and variability, across space and over time, of the various dimensions of stocks and flows of labor use: length of working time, the partition of a given amount of labor stock between part-time and full-time workers, the institutional and social framework influencing patterns of participation. A further development of these insights, and a more punctual comment on their critical implications for the lines of reasoning prevailing in the standard macroeconomics, would require a further occasion and a more careful reflexion.

References

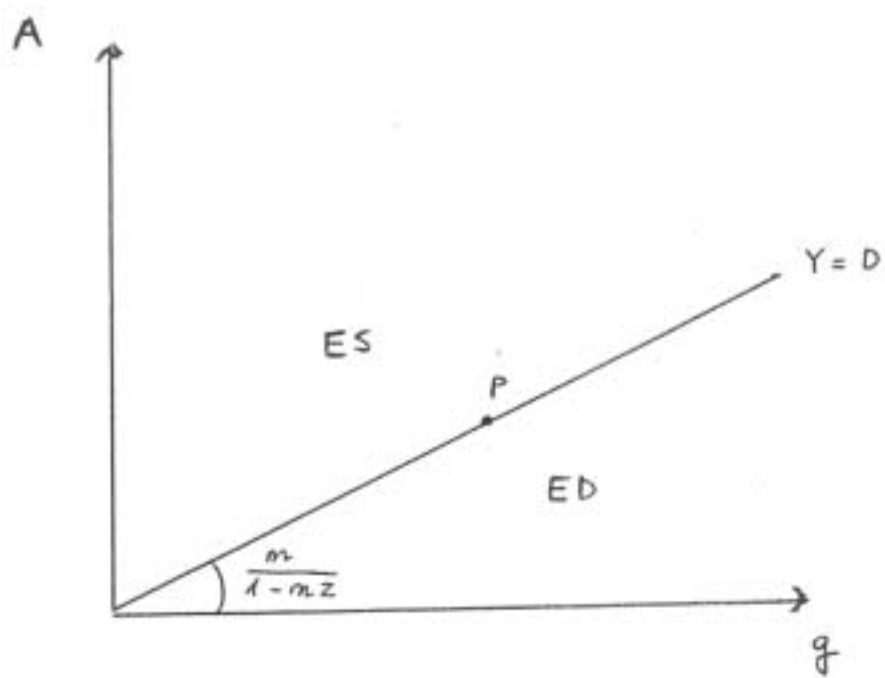
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(fig. 1)

Economic Growth and Employment Performance in Selected OECD Countries.
Decomposition of per capita GDP in 1991, 1995 and 2000 (absolute values)

	Potential labour supply (%)	Hourly productivity (in PPPs)	Employment rate (15-64) (%)	Av. yearly working hours	Per capita GDP (in PPPs)
	WAP/POP x	Y/H x	N/WAP x	H/N =	
Germany					
1991	68.7	140.4	71.0	1655.1	113.4
1995	68.0	153.1	68.2	1643.4	116.7
2000	67.9	164.0	70.0	1634.3	127.3
France					
1991	65.7	153.3	60.8	1761.4	107.9
1995	65.4	163.6	59.4	1735.7	110.3
2000	65.3	168.6	61.6	1763.5	119.8
Italy					
1991	69.2	145.3	58.8	1784.0	105.5
1995	68.6	161.0	56.5	1759.0	109.7
2000	67.8	170.0	59.5	1803.7	123.6
United Kingdom					
1991	65.7	110.9	70.5	1890.5	97.1
1995	65.2	120.4	69.7	1870.4	102.4
2000	65.7	136.8	72.4	1886.2	122.7
Spain					
1991	66.1	113.7	54.6	1960.5	80.4
1995	67.1	121.9	51.9	1951.9	83.0
2000	67.0	124.5	59.7	2002.3	99.6
Netherlands					
1991	69.5	158.7	65.7	1520.4	110.2
1995	69.0	169.6	67.7	1462.5	115.9
2000	68.4	179.9	76.3	1483.0	139.2
Eu 15					
1991	67.2	129.1	65.0	1774.6	100.0
1995	66.9	143.1	62.9	1762.1	106.1
2000	66.8	152.8	66.2	1784.7	120.7
Usa					
1991	65.6	155.2	72.1	1933.5	142.0
1995	65.4	165.2	73.6	1979.3	157.3
2000	66.1	181.8	75.1	2072.6	186.9
Japan					
1991	70.7	108.3	72.4	2139.2	118.6
1995	69.7	120.3	74.2	2027.0	126.0
2000	68.4	129.9	74.5	2030.3	134.6

Note : WAP=working age population (15-64); POP=total population; Y=index of real GDP in PPPs at 1995 prices (1991 Eu 15 average per capita GDP=100); H=all employed total working hours; N=total employment.
Sources : Eurostat; OECD for POP, WAP and N of USA and Japan.

Economic Growth and Employment Performance in Selected OECD Countries.
Decomposition of per capita GDP growth - 1991-2000 (period percentage changes)

	Potential labour supply (%)	Hourly productivity (in PPPs)	Employment rate (15-64) (%)	Av. yearly working hours	Per capita GDP (in PPPs)
	WAP/POP +	Y/H +	N/WAP +	H/N =	
Germany					
1991-00	-1.2	16.8	-1.5	-1.3	12.2
1991-95	-1.0	9.1	-4.0	-0.7	2.9
1995-00	-0.2	7.1	2.6	-0.6	9.0
France					
1991-00	-0.6	10.0	1.4	0.1	11.0
1991-95	-0.5	6.7	-2.3	-1.5	2.3
1995-00	-0.1	3.1	3.7	1.6	8.6
Italy					
1991-00	-2.0	17.0	1.1	1.1	17.2
1991-95	-0.9	10.8	-3.9	-1.4	4.0
1995-00	-1.1	5.6	5.2	2.5	12.6
United Kingdom					
1991-00	0.0	23.4	2.7	-0.2	26.5
1991-95	-0.8	8.6	-1.1	-1.1	5.4
1995-00	0.8	13.6	3.8	0.8	19.9
Spain					
1991-00	1.4	9.5	9.3	2.1	24.0
1991-95	1.6	7.2	-4.8	-0.4	3.3
1995-00	-0.2	2.1	14.8	2.6	20.1
Netherlands					
1991-00	-1.7	13.4	16.2	-2.5	26.3
1991-95	-0.8	6.9	3.1	-3.8	5.2
1995-00	-0.9	6.1	12.7	1.4	20.1
Eu 15					
1991-00	-0.5	18.4	1.9	0.6	20.7
1991-95	-0.3	10.9	-3.3	-0.7	6.1
1995-00	-0.2	6.8	5.4	1.3	13.8
Usa					
1991-00	0.7	17.1	4.1	7.2	31.7
1991-95	-0.4	6.5	2.0	2.4	10.8
1995-00	1.1	10.0	2.1	4.7	18.8
Japan					
1991-00	-3.2	20.0	2.9	-5.1	13.5
1991-95	-1.5	11.1	2.4	-5.2	6.2
1995-00	-1.7	8.0	0.5	0.2	6.8

Note : WAP=working age population (15-64); POP=total population; Y=index of real GDP in PPPs at 1995 prices (1991 Eu 15 average per capita GDP=100); H=all employed total working hours; N=total employment.
Sources : Eurostat; OECD for POP, WAP and N of USA and Japan.

somma res ass res ass %

12.8	0.6	4.9
3.4	0.4	14.9
8.9	0.1	1.2
11.0	0.1	0.8
2.5	0.2	10.0
8.3	0.2	2.6
17.2	0.0	0.0
4.6	0.6	13.7
12.2	0.4	3.3
25.9	0.6	2.1
5.7	0.2	4.1
19.1	0.8	4.1
22.4	1.6	6.8
3.6	0.3	10.0
19.4	0.7	3.6
25.4	0.9	3.5
5.4	0.2	4.3
19.3	0.9	4.2
20.4	0.4	1.7
6.5	0.4	7.0
13.3	0.5	3.6
29.1	2.5	7.9
10.5	0.3	2.7
17.9	1.0	5.2
14.6	1.2	8.6
6.8	0.6	9.2
6.9	0.1	1.4

Economic Growth and Employment Performance in Selected OECD Countries.
Decomposition of per capita GDP in 1991, 1995 and 2000 (*absolute values*)

	Potential labour supply (%)	Hourly productivity (in PPPs)	Employment rate (15-64) (%)	Av. yearly working hours	<i>Per capita GDP (in PPPs)</i>
	WAP/POP x	Y/H x	N/WAP x	H/N =	Y/POP
Germany					
1991	68.7	140.4	71.0	1655.1	113.4
1995	68.0	153.1	68.2	1643.4	116.7
2000	67.9	164.0	70.0	1634.3	127.3
France					
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Italy					
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1995	68.6	161.0	56.5	1759.0	109.7
2000	67.8	170.0	59.5	1803.7	123.6
United Kingdom					
1991	65.7	110.9	70.5	1890.5	97.1
1995	65.2	120.4	69.7	1870.4	102.4
2000	65.7	136.8	72.4	1886.2	122.7
Spain					
1991	66.1	113.7	54.6	1960.5	80.4
1995	67.1	121.9	51.9	1951.9	83.0
2000	67.0	124.5	59.7	2002.3	99.6
Netherlands					
1991	69.5	158.7	65.7	1520.4	110.2
1995	69.0	169.6	67.7	1462.5	115.9
2000	68.4	179.9	76.3	1483.0	139.2
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2000	66.8	152.8	66.2	1784.7	120.7
Usa					
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1995	65.4	165.2	73.6	1979.3	157.3
2000	66.1	181.8	75.1	2072.6	186.9
Japan					
1991	70.7	108.3	72.4	2139.2	118.6
1995	69.7	120.3	74.2	2027.0	126.0
2000	68.4	129.9	74.5	2030.3	134.6

Note : WAP=working age population (15-64); POP=total population; Y=index of real GDP in PPPs at 1995 prices (1991 Eu 15 average per capita GDP=100); H=all employed total working hours; N=total employment.
Sources : Eurostat; OECD for POP, WAP and N of USA and Japan.

Economic Growth and Employment Performance in Selected OECD Countries.
Decomposition of per capita GDP growth - 1991-2000 (*yearly percentage changes*)

	Potential labour supply (%)	Hourly productivity (in PPPs)	Employment rate (15-64) (%)	Av. yearly working hours	<i>Per capita GDP (in PPPs)</i>
	WAP/POP +	Y/H +	N/WAP +	H/N =	Y/POP
Germany					
1991-00	-0.1	1.7	-0.2	-0.1	1.3
1991-95	-0.2	2.2	-1.0	-0.2	0.7
1995-00	0.0	1.4	0.5	-0.1	1.7
France					
1991-00	-0.1	1.1	0.2	0.0	1.2
1991-95	-0.1	1.6	-0.6	-0.4	0.6
1995-00	0.0	0.6	0.7	0.3	1.7
Italy					
1991-00	-0.2	1.8	0.1	0.1	1.8
1991-95	-0.2	2.6	-1.0	-0.4	1.0
1995-00	-0.2	1.1	1.0	0.5	2.4
United Kingdom					
1991-00	0.0	2.4	0.3	0.0	2.6
1991-95	-0.2	2.1	-0.3	-0.3	1.3
1995-00	0.2	2.6	0.8	0.2	3.7
Spain					
1991-00	0.2	1.0	1.0	0.2	2.4
1991-95	0.4	1.7	-1.2	-0.1	0.8
1995-00	0.0	0.4	2.8	0.5	3.7
Netherlands					
1991-00	-0.2	1.4	1.7	-0.3	2.6
1991-95	-0.2	1.7	0.8	-1.0	1.3
1995-00	-0.2	1.2	2.4	0.3	3.7
Eu 15					
1991-00	-0.1	1.9	0.2	0.1	2.1
1991-95	-0.1	2.6	-0.8	-0.2	1.5
1995-00	0.0	1.3	1.1	0.3	2.6
Usa					
1991-00	0.1	1.8	0.5	0.8	3.1
1991-95	-0.1	1.6	0.5	0.6	2.6
1995-00	0.2	1.9	0.4	0.9	3.5
Japan					
1991-00	-0.4	2.0	0.3	-0.6	1.4
1991-95	-0.4	2.7	0.6	-1.3	1.5
1995-00	-0.4	1.5	0.1	0.0	1.3

Note : WAP=working age population (15-64); POP=total population; Y=index of real GDP in PPPs at 1995 prices (1991 Eu 15 average per capita GDP=100); H=all employed total working hours; N=total employment.
Sources : Eurostat; OECD for POP, WAP and N of USA and Japan.

somma	res ass	res ass %
1.3	0.007	0.5
0.8	0.027	3.7
1.7	0.004	0.2
1.2	0.001	0.1
0.6	0.014	2.5
1.6	0.009	0.5
1.8	0.000	0.0
1.0	0.034	3.4
2.4	0.016	0.7
2.6	0.006	0.2
1.3	0.014	1.0
3.7	0.031	0.8
2.4	0.018	0.8
0.8	0.020	2.5
3.7	0.027	0.7
2.6	0.010	0.4
1.3	0.014	1.1
3.7	0.032	0.8
2.1	0.004	0.2
1.5	0.026	1.8
2.6	0.019	0.7
3.1	0.028	0.9
2.6	0.018	0.7
3.5	0.037	1.0
1.4	0.014	1.0
1.6	0.035	2.3
1.3	0.004	0.3

Base<dati

	1991	1995	2000		1991	1995	2000		1991	1995	2000		1991	1995	2000		1991	1995	2000
POP				Y in PPP				Ntot				H				Y in PPP			
D	78,797	80,594	81,132	D	8,935	9,408	10,326	D	38,457	37,384	38,534	D	63,651,344	61,438,628	62,976,116	D	8,935	9,408	10,326
F	55,292	56,425	57,894	F	5,964	6,225	6,934	F	22,092	21,925	23,317	F	38,912,651	38,056,060	41,119,254	F	5,964	6,225	6,934
I	56,610	56,746	57,189	I	5,971	6,227	7,069	I	23,032	21,993	23,059	I	41,089,582	38,686,743	41,591,488	I	5,971	6,227	7,069
UK	56,904	57,676	58,679	UK	5,524	5,904	7,203	UK	26,357	26,215	27,910	UK	49,829,219	49,033,638	52,642,913	UK	5,524	5,904	7,203
E	38,756	38,917	39,211	E	3,114	3,229	3,907	E	13,966	13,571	15,671	E	27,380,880	26,489,226	31,378,694	E	3,114	3,229	3,907
NL	14,743	15,192	15,683	NL	1,625	1,761	2,183	NL	6,733	7,098	8,182	NL	10,236,970	10,380,680	12,133,853	NL	1,625	1,761	2,183
EU15	360,705	366,911	372,036	EU15	36,071	38,931	44,921	EU15	157,491	154,419	164,702	EU15	279,482,030	272,106,565	293,942,952	EU15	36,071	38,931	44,921
USA	252,867	263,082	275,372	USA	35,902	41,383	51,473	USA	119,629	126,520	136,641	USA	231,303,624	250,425,913	283,201,928	USA	35,902	41,383	51,473
JAP	123,911	125,068	126,487	JAP	14,698	15,758	17,026	JAP	63,459	64,607	64,534	JAP	135,752,552	130,957,417	131,020,348	JAP	14,698	15,758	17,026
PEL				H				PEL				Ntot				POP			
D	54,130	54,838	55,082	D	63,651,344	61,438,628	62,976,116	D	54,130	54,838	55,082	D	38,457	37,384	38,534	D	78,797	80,594	81,132
F	36,335	36,896	37,829	F	38,912,651	38,056,060	41,119,254	F	36,335	36,896	37,829	F	22,092	21,925	23,317	F	55,292	56,425	57,894
I	39,155	38,907	38,784	I	41,089,582	38,686,743	41,591,488	I	39,155	38,907	38,784	I	23,032	21,993	23,059	I	56,610	56,746	57,189
UK	37,378	37,589	38,540	UK	49,829,219	49,033,638	52,642,913	UK	37,378	37,589	38,540	UK	26,357	26,215	27,910	UK	56,904	57,676	58,679
E	25,601	26,128	26,271	E	27,380,880	26,489,226	31,378,694	E	25,601	26,128	26,271	E	13,966	13,571	15,671	E	38,756	38,917	39,211
NL	10,249	10,481	10,722	NL	10,236,970	10,380,680	12,133,853	NL	10,249	10,481	10,722	NL	6,733	7,098	8,182	NL	14,743	15,192	15,683
EU15	242,258	245,631	248,640	EU15	279,482,030	272,106,565	293,942,952	EU15	242,258	245,631	248,640	EU15	157,491	154,419	164,702	EU15	360,705	366,911	372,036
USA	165,898	171,982	181,954	USA	231,303,624	250,425,913	283,201,928	USA	165,898	171,982	181,954	USA	119,629	126,520	136,641	USA	252,867	263,082	275,372
JAP	87,615	87,123	86,573	JAP	135,752,552	130,957,417	131,020,348	JAP	87,615	87,123	86,573	JAP	63,459	64,607	64,534	JAP	123,911	125,068	126,487
PEL/POP				Y/H				N/PEL				h				Y/POP			
D	68.7	68.0	67.9	D	140.4	153.1	164.0	D	71.0	68.2	70.0	D	1,655	1,643	1,634	D	113.4	116.7	127.3
F	65.7	65.4	65.3	F	153.3	163.6	168.6	F	60.8	59.4	61.6	F	1,761	1,736	1,763	F	107.9	110.3	119.8
I	69.2	68.6	67.8	I	145.3	161.0	170.0	I	58.8	56.5	59.5	I	1,784	1,759	1,804	I	105.5	109.7	123.6
UK	65.7	65.2	65.7	UK	110.9	120.4	136.8	UK	70.5	69.7	72.4	UK	1,891	1,870	1,886	UK	97.1	102.4	122.7
E	66.1	67.1	67.0	E	113.7	121.9	124.5	E	54.6	51.9	59.7	E	1,961	1,952	2,002	E	80.4	83.0	99.6
NL	69.5	69.0	68.4	NL	158.7	169.6	179.9	NL	65.7	67.7	76.3	NL	1,520	1,462	1,483	NL	110.2	115.9	139.2
EU15	67.2	66.9	66.8	EU15	129.1	143.1	152.8	EU15	66.2	62.9	66.2	EU15	1,775	1,762	1,785	EU15	100.0	106.1	120.7
USA	65.6	65.4	66.1	USA	155.2	165.2	181.8	USA	72.1	73.6	75.1	USA	1,934	1,979	2,073	USA	142.0	157.3	186.9
JAP	70.7	69.7	68.4	JAP	108.3	120.3	129.9	JAP	72.4	74.2	74.5	JAP	2,139	2,027	2,030	JAP	118.6	126.0	134.6