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Eileen Appelbaum\* and Ronald Schettkat\*\*

## The End of Full Employment? On Economic Development in Industrialized Countries

*In view of high and rising jobless rates in the industrialized countries the solution of the unemployment problem becomes a cardinal question for politicians and economists. What factors have determined the unemployment trend since the 1960s and what conclusions can be drawn for employment policy?*

In the 1960s the unemployment rate in the main industrialized countries (the G7 countries plus Sweden) was about 2 percent or even lower with the exception of the US and Canada where approximately 5 percent of the labor force was without a job. Twenty years later unemployment in these countries had risen to about 10 percent, and only Sweden and Japan still experienced unemployment rates of roughly 2 percent. By the early 1990s even Japan and Sweden suffered from increasing unemployment. In 1992 Sweden's unemployment rate was 5.3 percent and by the end of 1993 it was around 9.0 percent.<sup>1</sup> Why did the industrialized economies experience such dramatic increases in unemployment and why, nevertheless, did the employment to population ratio develop so differently in these countries (see Table 1)?

Economists' explanations for this dramatic increase in unemployment range from the impact of deflationary policies that reduce demand to the lingering effects of the negative exogenous supply shocks that occurred in the 1970s, and from structural shifts in technology or labor force characteristics that increase the natural rate of unemployment to institutional features of an economy such as the strength of unions, welfare state institutions, and unemployment insurance. While some of these explanations may capture part of the story, and exogenous factors have exacerbated the difficulties industrialized economies have had in generating jobs and raising real wages, we argue that the fundamental force behind the shift from full employment to unemployment is the endogenous development process itself. Our explanation rests on the fact that the price elasticity of demand for

many consumer durables has declined over time as household wealth and the accumulation by households of these durable goods grew over time. Our analytical model allows us to explain why the industrialized economies experienced a "virtuous circle" of full employment and real income growth in the 1950s and 1960s, and why unemployment and low income growth have become problems in the 1980s. The core features of our model are the easily observable facts that productivity developments differ among industries and that the goods and services produced by these industries have different price and income elasticities of demand. These price and income elasticities of demand depend, in part, on how large a quantity of each good or service is demanded at current prices, while current prices reflect productivity conditions in the various industries.<sup>2</sup>

In the discussion that follows, we show why productivity growth, employment, and income all developed so favorably after World War II. The theory we offer for these phenomena also explains why the highly industrialized economies no longer experience low unemployment. Furthermore, our model explains why employment rates (the employment to population ratio) in these economies have diverged since then.

We identify three distinct economic policy approaches to these employment problems that have been adopted by the industrialized economies:

- a low tax burden combined with other policies that allow high wage and income differentiation,

<sup>1</sup> OECD: Main Economic Indicators, December 1993.

<sup>2</sup> For a more comprehensive description see E. Appelbaum, R. Schettkat: Employment Developments in Industrialized Economies: Explaining Common and Diverging Trends, Discussion Paper FS I 93-313, Wissenschaftszentrum Berlin für Sozialforschung 1993.

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## UNEMPLOYMENT

- active welfare state policies, and
- passive welfare state policies.

The US and Japan are examples of the first policy approach. Both countries experienced employment expansions in private services made possible by high

wage and income differentiation and low tax burdens. In addition, the Japanese retained a high share of employment in manufacturing as a result of success in world markets, due in part to Japanese trade and industrial policies. Sweden provides an example of the second policy approach. Sweden experienced an expansion of

**Table 1**  
**Economic Indicators**

	Germany					Japan				
	1963	1973	1983	1989	1991	1963	1973	1983	1989	1991
<b>Employment Trends (1963 = 100)</b>										
Overall	100.0	100.3	93.8	103.4	108.4	100.0	114.5	124.8	133.4	138.6
Agriculture	100.0	61.2	40.6	32.1	30.4	100.0	59.0	44.5	38.8	35.8
Industry	100.0	97.9	83.5	84.4	87.2	100.0	134.4	136.9	144.2	150.6
Manufacturing	100.0	97.8	n.a.	86.6	89.8	100.0	130.2	126.9	133.9	139.9
Services	100.0	115.3	133.6	148.6	158.3	100.0	133.4	164.9	183.4	192.6
<b>Employment Shares</b>										
Agriculture	11.9	7.3	5.0	3.7	3.4	26.0	13.4	9.3	7.6	6.7
Industry	48.7	47.5	41.5	39.8	39.2	31.7	37.2	34.8	34.3	34.4
Manufacturing	37.7	36.7	n.a.	31.6	31.2	24.1	27.4	24.5	24.2	24.3
Services	39.3	45.2	53.6	56.5	57.4	42.3	49.3	56.0	58.2	58.8
<b>Employment Rates</b> (% of population 15 to 65 years)										
Employment, overall	69.1	66.8	58.2	62.7	64.3	72.4	70.8	71.1	71.7	73.6
Agriculture	8.3	4.9	3.0	2.3	2.2	18.8	9.5	6.6	5.4	4.9
Industry	33.7	31.8	25.3	24.9	25.2	22.9	26.4	24.7	24.5	25.4
Manufacturing	26.0	24.5	n.a.	19.8	20.0	17.5	19.4	17.4	17.4	17.9
Services	27.2	30.2	32.6	35.4	36.9	30.6	34.9	39.8	41.7	43.3
<b>Other Indicators</b>										
Labor Force Participation Rate	69.6	67.5	63.6	67.4	68.1	73.3	71.7	73.0	73.3	75.2
Unemployment Rate	0.7	1.0	8.4	7.0	5.6	1.3	1.3	2.6	2.3	2.1
Transfers/GDP in %	14.4	17.1	21.3	20.4	19.6	n.a.	10.1	17.4	16.4	16.5
Taxes/GDP in %	34.1	38.4	41.5	41.8	41.9	n.a.	21.3	27.1	30.2	30.8
<hr/>										
	Sweden					USA				
	1963	1973	1983	1989	1991	1963	1973	1983	1989	1991
<b>Employment Trends (1963 = 100)</b>										
Overall	100.0	106.0	115.5	122.1	118.4	100.0	125.5	148.8	173.2	172.5
Agriculture	100.0	58.4	48.4	33.6	30.2	100.0	74.2	73.5	70.1	70.4
Industry	100.0	95.1	84.1	87.6	83.3	100.0	118.7	118.8	131.6	124.3
Manufacturing	n.a.	n.a.	n.a.	n.a.	n.a.	100.0	116.8	110.7	120.1	113.4
Services	100.0	129.0	162.2	177.6	180.2	100.0	136.0	176.2	211.1	214.3
<b>Employment Shares</b>										
Agriculture	12.9	7.1	5.4	3.6	3.2	7.1	4.2	3.5	2.9	2.9
Industry	41.0	36.8	29.9	29.4	28.2	35.1	33.2	28.0	26.7	25.3
Manufacturing	n.a.	27.5	22.3	21.9	20.1	26.6	24.8	19.8	18.5	17.5
Services	46.1	56.0	64.7	67.0	68.5	57.8	62.6	68.5	70.5	71.8
<b>Employment Rates</b> (% of population 15 to 65 years)										
Employment, overall	72.4	73.6	78.5	81.7	78.4	60.0	63.4	64.8	71.6	70.5
Agriculture	9.4	5.2	4.3	2.9	2.6	4.3	2.7	2.3	2.1	2.0
Industry	29.7	27.1	23.5	24.1	22.6	21.0	21.0	18.2	19.1	17.8
Manufacturing	n.a.	20.2	17.5	17.9	16.1	16.0	15.7	12.8	13.2	12.3
Services	33.3	41.3	50.8	54.7	55.0	34.7	39.7	44.4	50.5	50.6
<b>Other Indicators</b>										
Labor Force Participation Rate	73.6	75.5	81.3	82.8	82.4	63.6	66.6	71.7	75.6	75.6
Unemployment Rate	1.7	2.5	3.5	1.3	2.7	5.7	4.9	9.6	5.3	6.7
Transfers/GDP in %	10.4	14.1	21.2	22.6	24.5	5.9	9.1	12.4	11.4	13.0
Taxes/GDP in %	32.2	41.0	50.7	56.7	69.0	27.0	29.3	27.9	29.2	29.1

Source: E. Appelbaum, R. Schettkat: Employment Developments in Industrialized Economies: Explaining Common and Diverging Trends, Discussion Paper FS 193-313, Wissenschaftszentrum Berlin für Sozialforschung 1993.

employment in public services accompanied by low wage and income differentials, but also an increasing tax burden to finance public services. Finally, Germany and other Continental European countries are examples of the third policy approach. These countries experienced employment stagnation, relatively narrow and unchanging wage differentials, a reduction in the employment to population ratio, and an increasing tax burden to finance income maintenance programs. After analyzing employment developments over the last several decades, we conclude with a discussion of the principal policies which this analysis suggests can be effective in restoring full employment.

**The Virtuous Circle of Full Employment**

The most important features of labor market trends in the industrialized economies up to the 1970s were low rates of unemployment, expanding employment in highly productive manufacturing industries, increasing incomes, and declining wage differentials. This virtuous circle of economic development, already apparent in the US in the 1940s, began in Europe in the 1950s. The positive correlation between productivity growth and employment expansion by industry provided the basis for the unprecedented growth in wealth of the industrialized capitalist economies.

Industries with high and rising productivity attracted labor by paying higher wages. Other industries followed and paid higher wages in order to compete for workers. Wage setting was mainly influenced by market forces. As is characteristic of a competitive labor market in full employment equilibrium, wage differentials among

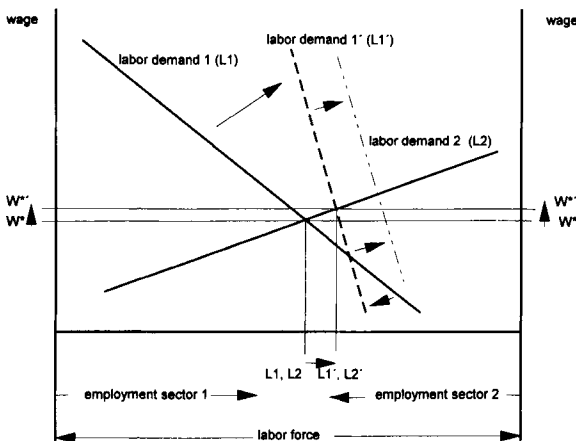
industries tended to narrow and real wage growth by industry in each country tended to track the economy-wide increase in average productivity. As a result, wages grew slower than productivity in industries with above average productivity growth and faster than productivity in industries with below average productivity growth. Consistent with this, relative prices tended to fall in high productivity growth industries and to rise in low productivity growth industries.

With demand for goods and services highly price elastic, markets for the output of industries with high and rising productivity tended to expand while markets for the output of industries with slow productivity growth tended to be stifled by the increase in relative prices. These developments are illustrated in Figure 1: productivity growth in sector 1 leads the demand for labor to expand in sector 1 and this leads the equilibrium wage to increase; employment in sector 2 – where productivity stagnates – declines.

In the extreme, the demand for some services, such as railroad porters or domestic servants, tended to be extinguished. At the high productivity growth end of the spectrum, restrained wage growth allowed for an even quicker expansion of these industries. This process formed the basis for the famous Rehn-Meidner (or Swedish) model of industrial development,<sup>3</sup> which was successful as long as employment in industries with more rapidly rising productivity expanded.

Industries with high and/or rising productivity were found mainly in manufacturing. Productivity increases and employment expansions were positively correlated because three effects occurred simultaneously: (1) above average productivity increases allowed relative prices to fall which, because demand for manufactured goods was price elastic, led to (2) an expansion of demand that more than compensated for the labor saving effects of productivity growth, and which led to (3) rising real incomes which were used to buy the products of industries with high productivity gains. In Figure 1 this leads to a parallel shift of the labor demand function of sector 1. The expansion of industries producing household durables became the hallmark of this expansionary period. Furthermore, productivity gains in this virtuous circle were driven by economies of scale as markets for mass produced goods expanded. Thus, positive feedback effects from full employment and expanding markets in mass production industries led to further productivity gains and income growth as the scale of operations increased. In these circumstances, labor market effects

**Figure 1**  
**Price Elasticity of Demand for Goods of Sector 1 greater than 1**



<sup>3</sup> R. Meidner, A. Hedborg: Modell Schweden. Erfahrungen einer Wohlfahrtsgesellschaft, Frankfurt/New York 1984.

of institutional differences among the industrialized countries were swept away by the market forces unleashed by a full employment economy. This is confirmed by empirical analysis of the relationship between employment rates and institutions, which is not significant for the early 1970s but becomes quite significant by the 1980s.<sup>4</sup>

**The End of the Virtuous Circle**

In the 1970s and 1980s, diverging labor market trends affecting employment to population ratios, unemployment rates, wage growth, and wage dispersion emerged in the industrialized countries. These diverging trends can be explained by institutional differences among these economies that shaped the responses to a new economic development common to all of these countries: In contrast to the 1950s and 1960s, industries with high productivity growth experienced stagnant or even declining employment in absolute terms. That is, over the period since 1970, productivity growth in technologically progressive industries has led to a decreased demand for labor in these industries (as illustrated in Figure 2). It is industries with low productivity growth (sector 2 in Figure 2) that have experienced the most rapid employment growth. In countries with growing employment and a rising employment to population ratio, the services sector (which generally, though this is clearly an oversimplification, encompasses activities with lower and more slowly rising productivity) has expanded sufficiently to offset stagnant or declining employment in manufacturing.

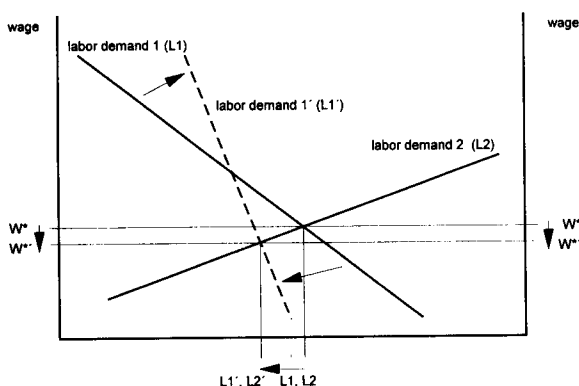
Countries which were not successful in shifting employment from higher productivity goods producing activities to lower productivity service activities experienced employment stagnation or only very small increases in employment, as can clearly be seen in the

employment ratios shown in Table 1. This change in the relationship between productivity growth and employment growth marks a shift in the development of highly industrialized countries which is often, though imprecisely, described as the shift from an industrial society to a service economy. Now that employment growth depends on more rapid expansion of industries with lower productivity, institutional features of the various countries have become important. Whereas the transition of labor from low productivity, low paying industries into high productivity, high paying industries is easily accomplished by market forces, it is difficult to imagine how market forces can manage the opposite shift.

At the heart of the change in the relationship between productivity growth and employment growth is the change in the price elasticity of demand for consumer durables from elastic to inelastic as households in the industrialized economies have achieved nearly universal ownership of these goods. While advances in productivity in these industries still lead to reductions in relative prices, these price reductions no longer lead to an expansion of the market for these products sufficient to increase (or, in some cases, even to maintain) employment in these industries. According to OECD data for the G7 countries, manufacturing employment in the last two decades declined in absolute terms in Germany and Italy, and as a share of total employment in all 7 countries. The share of the labor force employed in manufacturing declined by 17 percentage points in Germany and Italy, by 10 percentage points in the US and by 6 percentage points in the UK, France, and Canada. Even in Japan, manufacturing's share of employment declined by 3 percentage points. Employment growth in these countries, if it occurs at all, results from absorbing a growing proportion of the population into employment in service activities.

Thus, such different countries as the US and Sweden have in common a high share of employment in services and a high employment to population ratio. These outcomes, however, are the result of completely different policies and institutional settings. In the US the rapid employment expansion in low productivity services was made possible by the expansion of marketed services which, in turn, was facilitated by high wage differentials. In Sweden, on the other hand, highly centralized and well organized labor successfully pushed for a solidaristic wage policy and low wage differentials, which did not allow private services to expand very much. Paying comparable wages to workers in both goods and services producing industries resulted in high relative prices for private

**Figure 2**  
**Price Elasticity of Demand for Goods of Sector 1 less than 1**



<sup>4</sup> R. E. Rowthorn: Centralisation, employment and wage dispersion, in: The Economic Journal, Vol. 102, May 1992, pp. 506-523.

services, which on price elasticity grounds limited the market for these services. The Swedish solution to this difficulty through the 1980s was the absorption of a growing labor force through more rapid expansion of public services. As a consequence, the tax burden in Sweden rose tremendously, and this contributed in the most recent period to the decline of the Swedish model.

Both the US and Sweden successfully integrated an increasing part of their populations into the labor market, and in the US this was accomplished even though the population itself was growing. These countries represent respectively examples of employment expansion through wage differentiation and through active welfare state policies. A third pattern occurred in the Continental European welfare states. Here, institutions such as social insurance and relatively low wage differentials limited the expansion of official employment in low productivity activities. To reduce unemployment, these countries have undertaken deliberate policies intended to reduce the size of the labor force by encouraging early retirement and low female labor force participation rates. The result of these passive welfare state policies designed to maintain income via transfers while discouraging employment has been to increase the tax burden, albeit to a lesser extent than in Sweden. The low employment to population ratio, high tax burden, and high share of transfers in GDP shown in Table 1 confirm these results.

Even when the expansion of services employment occurs, however, it does not set a virtuous circle in motion. It is true that occupational segregation by gender has meant increased demand for women workers as service employment has expanded, and increased employment of women has led to the substitution of purchased services for the unpaid services of women in the home. But this has not generated positive feedback effects that contribute to rising productivity and rising wages. The reason is that, unlike most manufacturing industries, services that exhibit low productivity growth do not achieve economies of scale as their scale of operation increases. Hence an expanding market for these services does not translate, more or less automatically, into rising productivity.

Thus, the old virtuous circle no longer operates. Deflationary policies can exacerbate the problems of employment and income growth, but expansionary fiscal and monetary policies are no longer sufficient to jump start the economy and achieve acceptable income and employment outcomes. New approaches are necessary.

### **Principal Policies Promoting Employment**

Any theoretical model that represents the dynamics of economic development in a two-sector framework must

miss many specifics of actual economic trends. Nevertheless, our simple model captures the main facts of economic development in the industrialized economies and suggests important conclusions for economic policy. Most importantly, our analysis makes clear that neither labor market regulation nor mistaken macroeconomic policies are the primary cause of “deindustrialization” (the decline in the share of high paying manufacturing jobs), or of employment problems generally. The root cause lies in the economic development process itself. If anything, the failed experiments with financial market deregulation and supply-side macroeconomic policies of the 1980s can be understood as misguided attempts to deal with problems that had resisted more conventional approaches in the 1970s. Current attacks on labor market regulations and social policy, should they succeed, will have no greater success in reviving manufacturing employment. Even policies to raise worker skills, improve manufacturing technology, and transform work systems in factories and mills – all of which are essential to raise living standards and to enable firms located in industrialized countries to remain players in markets for manufactured goods – will not reverse the decline in manufacturing’s share of employment.

What policies, then, can succeed in promoting employment growth in the industrialized economies, and particularly the growth of high wage jobs? Our analysis suggests that several principal policy approaches are available. Most promising are policies for raising living standards and developing markets in less industrialized economies, policies that promote product and process innovations in service activities and that facilitate the development of new technologies to address articulated but unmet human needs (e.g. environmental technologies), and policies to expand public investment. We examine these policies below from the perspective of our model. We also examine the employment effects of high wage dispersion, downward wage flexibility, and reductions in working time.

### **Policies to Raise Living Standards**

The problems of saturated markets in which increases in productivity lead to declines in employment can be overcome, and the demand for consumer durables and other manufactured goods can be increased, by raising the incomes of poorer households in the industrialized economies and of households in general in less developed countries. A “Marshall” plan for Eastern Europe and Third World countries, for example, will accelerate the expansion of world markets for goods produced by technologically progressive industries. Over the medium run, this may lead to increased employment in these

sectors in the industrialized economies where much of the world-wide production capacity is presently located.<sup>5</sup> Over longer time periods, these industries will tend to locate in the developing countries, closer to the markets they are serving. At this point, however, other policies, which take time to have an effect on employment in the industrialized economies, may begin to show results.

In this context, trade policies to open world markets will raise employment and living standards in both high wage and low wage countries. Policies to reduce trade barriers have positive effects on employment in the trading partners, and are preferable to mercantilist policies that enable some countries to develop at the expense of others and that only work in the absence of retaliatory actions by other countries.

### **Product and Process Innovations**

Broad, basic innovations that lead to the development of a variety of new products and the creation of new markets around these products can increase employment in technologically progressive manufacturing activities. To achieve this requires policies that support the innovative activities of firms, and it may well be that individual firms or an industry within a particular country can capture the price-elastic demand for such new products. Then, further improvements in process technologies that raise productivity and reduce price will expand the market for this new cluster of goods and will expand employment in these new manufacturing sectors. Innovation policies are especially relevant in an open world market where countries compete on a global level.

To achieve a substantial employment impact in manufacturing, however, requires the development or application of a new basic technology, capable of creating a new Kondratieff cycle. Although it is difficult to imagine in advance which technologies can initiate a new Kondratieff cycle, the development of products that improve the environment may be such an area. Surveys in industrialized economies regularly show that a majority of the population cares about the environment and would like cleaner air and water and products that are environmentally friendly. More than innovation policy is required, however, for the development of environmental technologies. Since the environment is a public rather than a private good, and it will be difficult to stimulate a market demand for environmental technologies, their development will rely either on public spending or on publicly mandated environmental standards for products. In the latter case, environmental technologies will be

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<sup>5</sup> The world market share, and jobs, will depend on having a skilled workforce and modern facilities and work organization.

incorporated into other marketed (private) goods (e.g. electric engines in cars). The demand for these technologies will be derived from the demand for products that will be consumed for other purposes, and thus may have limited employment creating effects. These are enhanced, however, if environmental standards are set in a way that creates early obsolescence for privately consumed products (outlawing cars that do not meet rigorous emission standards), or if the public sector uses its procurement practices to create a market for such goods (requiring electric engines in cars purchased by a local municipality, for example).

### **Price-inelastic Demand**

While policies that support innovation have potentially important employment effects when breakthroughs that create clusters of innovations occur, innovations that are gradual improvements of existing products and/or substitutes for existing products will have only limited effects on employment. Japan and Germany may be regarded as countries that followed a policy of supporting innovations over the last two decades. But, as we observed earlier, both Germany and Japan, although very successful in world markets, did not experience employment growth in manufacturing industries in relation to the labor force, and manufacturing employment in Germany declined in absolute terms. In large part this resulted from the loss of employment in technologically progressive industries producing mature products for which demand in the industrialized economies is inelastic. This job loss accelerated as competition from the newly industrialized economies increased.

Thus, while it is important for the industrialized economies to follow policies that support product innovation, short of a new Kondratieff cycle such policies are not likely to be sufficient to expand employment in manufacturing. The discussion of ever shorter product cycles, translated into our framework, means that products move quickly from the price-elastic to the price-inelastic part of the demand curve. The computer industry, which is currently undergoing a severe shakeout, may be taken as an example of rapid market saturation, movements to price-inelastic demand, and continuous product innovations.

Process innovations, both the development of new machinery and the reorganization of work to achieve continuous improvements in efficiency and quality, have much the same limited expansionary effect on manufacturing employment. Such policies are necessary for manufacturing companies to maintain market share, but are not sufficient to increase employment in industries

on the price-inelastic part of the demand curve. Failure to achieve continuous improvements in efficiency and quality is likely to prove disastrous for employment, however, as domestic producers would lose markets to competitors who had achieved such gains.

### Price-elastic Demand

The exception are industries manufacturing goods for which demand is price-elastic, where improvements in efficiency that translate into price reductions do lead to an expansion of the market and of employment. Thus, industries in which companies are innovative with respect to product technologies, process technologies, work organization, and corporate structure can experience significant growth in employment.

It is unfortunate that policies oriented toward improving production processes are focused on manufacturing. Given that demand for services is highly price- (as well as income) elastic—that is, that demand is unsaturated and is very responsive to decreases in the relative price of services—productivity increases in these industries could lead to an expansion of demand and employment. Despite the fact that many person-oriented services do not lend themselves easily to improvements in efficiency and have in the past registered stagnant productivity, this is not universally true of service activities. Installation and repair services, information gathering and reporting services, accounting and design services, software development services, among others, have registered substantial performance gains as a result of work reorganization and process improvements.

The lesson from an earlier period of experience with manufacturing is that raising productivity in marketed services, and sharing the performance gains among workers, firms, and consumers, is a promising way to raise wages and living standards while extending the market for such services and increasing employment. In the public sector, such efficiency gains reduce the tax burden associated with a given level of service.

### Public Investment and Collective Consumption

Public investment affects demand and employment through several channels. Public investment directly increases demand for manufactured goods and employment in manufacturing. The ability of domestic producers to capture this increase in demand, however, depends on (a) how competitive these firms are in world markets and (b) whether government procurement favors domestic content. Public investment is likely to enhance productivity in domestic private sector industries. If higher productivity is passed along to consumers in the form of

lower prices, this will expand the market for these goods. Employment effects will largely depend, however, on whether demand in the affected industries is price-elastic or price-inelastic—with favorable results if demand is elastic and unfavorable employment effects resulting otherwise. The implication is that the indirect employment effects of public investment are likely to be largest if public investment spurs the development of new products or if it enhances productivity in stagnant but price-elastic service activities.

Public spending on services can also increase employment. If the hierarchy of needs hypothesis holds, we can anticipate a further shift of expenditures to services. Clearly there is a widely accepted need for more service provision in the industrialized economies, as indicated by the discussions of health services in the US and nursing care insurance in Germany. These person-oriented services, however, have been characterized by low productivity growth and, especially in the cases of patient-care and child-care services, it is difficult to imagine that this will change. Given low productivity and low productivity gains in person-oriented services, employment expansion in these industries can occur in only two ways: one is relative wage reductions that keep the relative price of these services low, and the other is public provision of these services.<sup>6</sup> If wages in low productivity growth, marketed activities rise in concert with those in high productivity growth activities, the relative price of these activities will rise and the quantity of these activities demanded will decrease. This is sometimes referred to as “the cost disease of stagnant services.”

Of course, if services are provided publicly or are publicly subsidized then, in principle, a wage comparable to wages in technologically progressive industries can be paid without stifling demand. Day care provides a good example. If day care providers are expected to have appropriate training in early childhood education and are compensated accordingly, very few households will be able to afford private day care services. Public day care facilities that operate like the public schools, however, can meet the need for day care while paying salaries comparable to those paid to other workers with similar education and training. But public services are financed through the tax system. Rising wages in public sector jobs will increase taxes if, like day care, these services are technologically stagnant. This is more easily

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<sup>6</sup> F. W. Scharpf: Structures of Post-Industrial Society—or—Does Mass Unemployment Disappear in the Service and Information Economy?, in: E. Appelbaum, R. Schettkat (eds.): Labor Market Adjustment to Structural Change and Technological Progress, New York, Westport, London 1990, pp. 17-35.



accomplished when real wages in the whole economy are rising, but is burdensome for large numbers of taxpayers when real wages are stagnant or even declining. In addition, since public sector jobs are not mobile while jobs in the private sector tend to be footloose, the incentives for wage restraint are greater in the private sector. This may, as in Sweden, lead to increases in wages of public sector employees relative to the private sector, and may fuel a tax revolt. Finally, public provision or subsidies of services may create inefficiencies. These may not be larger than those of private sector firms, but there is no market to provide discipline or a correction, and the question must be addressed directly in any program for increasing public services.

#### Wage Dispersion

Alternatively, a wide wage dispersion can sustain the expansion of low wage service jobs so long as there is a ready supply of workers to fill these jobs. Low wages in these services stave off the "cost disease" while high wages in other occupations mean that there are people

with sufficient discretionary income to purchase these services. However, should the supply of low wage workers falter and demand for the services begin to outpace supply, wages will begin to rise. Then, the resulting change in relative prices will tend to extinguish market demand for these services as they become relatively more expensive and to encourage the substitution of self-service activities. The demand for services is highly price-elastic, and increases in price have a strong effect on quantities.

A policy that replaces wage increases with public subsidies of low wage workers through an earned income tax credit or other negative income tax scheme in order to maintain wage dispersion and relative price differentials can maintain low wage employment, but only in certain industries. High wage differentials create an incentive and a selection problem because workers are not willing to invest in training for low paying jobs. In order to avoid negative selection in areas where skills are important, as in health care services or education, wages in these industries need to be not too different from wages in jobs in

Geraldo Nunes de Queiroz

## Die Rolle des Technischen Fortschritts bei der Internationalen Arbeitsteilung

Der technische Fortschritt als komparativer Vorteil bei der internationalen Arbeitsteilung: Eine Analyse des Welthandels unter besonderer Berücksichtigung des Schwellenlandes Brasilien

The varying impact of technological progress on economic growth in the developing and industrialized countries and the characteristics of the present international economic system of the division of labour are reinforcing the view that the effects of international trade on the economic situation of a country depend on the products in which it fully specializes. The question therefore is what role is played in the economic development of a country by the technological level of its merchandise export structure. Does technological progress influence the ability of a country to trade on the world market? What influence do the various products - ranked according to their level of technological development - have on the economic development of a country?

These and other questions are discussed by the author. He also concludes with guideline data for both government infrastructure policy and private investors which could contribute to accelerating social and economic development.

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technologically progressive sectors with comparable skill levels. Given this dilemma for skilled services, the low wage strategy seems to be limited to less skilled services. While a negative income tax may solve the price/wage problem of certain services industries, it will not solve the incentive problem for investment in human capital. Wide wage dispersion reduces the willingness of workers to invest in education and training, and leads to socially suboptimal levels of such investments.

### Downward Flexibility of Wages

While downward wage flexibility would allow manufacturing firms that are on the price-inelastic part of the demand function to expand demand for their goods and would, in this way, preserve some jobs, the quantitative effect will be small. This is because price-inelastic demand leads quantities to react only mildly to price reductions subsequent to wage reductions. In any case, the employment effects of a decline in wages would be short-lived and would be wiped out by future increases in productivity. Firms will not be able to slow technological progress, and technological progress in industries on the price-inelastic part of the demand curve leads to reductions in employment even as prices fall and quantities of output produced increase. Moreover, a deliberate slowdown in productivity growth would damage a firm's competitive position in terms of price and, most likely, also in quality terms since product and process innovations are usually closely linked.

In fact, the wage restraint associated with less flexible wages may have a stronger positive effect on employment in firms and industries on the price-elastic part of the product demand curve and wage restraint – wages that rise more slowly than productivity growth – produces strong quantitative effects. According to a study of the impact of upward and downward wage flexibility in the US, wage restraint at the progressive end would have created more jobs in the 1970s than downward wage flexibility at the lower end was able to preserve.<sup>7</sup> The employment creation potential of wage restraint policies is unevenly distributed. It is highest in firms at the price elastic part of their product demand curves and it is low in firms at the price-inelastic part of their demand curves. A policy of wage restraint and too narrow wage differentials may also create microeconomic inefficiencies due to motivational problems.<sup>8</sup>

### Reductions in Working Time

Finally, if productivity increases in the technologically progressive sector are used to reduce average annual hours of work, rather than to increase wages, the effect may be to preserve employment in this sector. That is, the

decline in weekly or annual hours of work can offset the labor saving effect of productivity increases in this sector, at least until the next round of productivity increases. If, however, hours of work fall more rapidly than productivity, which would almost certainly be the case in the technologically stagnant sector and could occur in particular industries in the technologically progressive sector as well, then costs will rise, pushing up prices in the private sector and taxes in the public sector, and reducing aggregate hours of work and, perhaps, employment. This effect on costs and aggregate hours will be even more true if wages rise with the reduction in working time.

### Conclusion

The problems of joblessness and/or stagnating or declining real wages that have persisted since the early 1970s in the industrialized economies have been viewed by economists and policy makers as something of a mystery. Long lists of complicating factors and special circumstances have been compiled to explain high unemployment in one country, slow growth in another, and severe wage competition in still another. But the fundamental forces at work have gone unrecognized, and serious attempts by political leaders to understand and address these problems have been lacking. Instead, workers have been counseled that they must "adjust" to market forces beyond their control, and wait patiently for recovery. Public policy interventions are seen as futile, or even counterproductive.

It should be evident by now that the employment problems of the industrialized world are not those of an ordinary business cycle. Our analysis of employment developments over the last two decades makes clear the common source of these problems, situates them in the development process itself, and points to a set of policies that can address them. This analysis challenges both of the conventional views: on the one hand, that more austerity and less government will restore full employment and rising real wages or, on the other, that traditional Keynesian policies will do the trick. Our optimistic conclusion is that the jobs problem, while difficult, is not intractable. What is required are policies that treat the systemic nature of these problems, and not merely their myriad symptoms.

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<sup>7</sup> L. A. Bell, R. B. Freeman: Does a Flexible Wage Structure Increase Employment?: The U.S. Experience, NBER Working Paper No. 1604, Cambridge, MA, National Bureau of Economic Research, 1985.

<sup>8</sup> R. B. Freeman, R. Gibbons: Getting Together and Breaking Apart: the decline of centralised collective bargaining. With special reference to Sweden. Paper presented at the conference on Labor Contracts and Mobility, European University Institute, Florence 1993; R. Ramaswamy, R. Rowthorne: Centralized Bargaining, Efficiency Wages, and Flexibility, IMF Working Paper, WP/93/25, 1993.