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April 20, 1995

To: Members of the Executive Board

From: The Secretary

Subject: Kingdom of the Netherlands - Netherlands -
Selected Background Issues

The attached supplement provides additional background material to the staff report on the 1995 Article IV consultation discussions with the Netherlands (SM/95/67, 4/5/95).

Mr. Bakker (ext. 34649), Mr. Halikias (ext. 38972), or Mr. Lakwijk (ext. 38819) is available to answer technical or factual questions relating to this paper prior to the Board discussion.

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INTERNATIONAL MONETARY FUND

KINGDOM OF THE NETHERLANDS - NETHERLANDS

Selected Background Issues

Prepared by B. Bakker, I. Halikias, and F. Lakwijk

Approved by the European I Department

April 17, 1995

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I. Employment, Wage Growth, and Labor Productivity ^{1/}

1. Introduction

During 1983-93, nominal and real wage growth in the Netherlands was well below that in most other industrial countries, especially in Europe. At the same time, employment growth in the Netherlands was comparatively rapid, well in excess of that in other European countries and broadly in line with the rate of increase in employment in the United States. Although the rise in employment in the Netherlands was well above the European average, this was not associated with faster output growth, but rather lower growth in labor productivity.

This chapter addresses the question of whether the lower increase in wages was a factor in the labor productivity and employment developments in the Netherlands. It argues that there is indeed such a link: rapid wage growth leads to a substitution of capital for labor, and hence to less labor-intensive production; slow wage growth leads to less rapid growth of labor productivity and, for the same output growth, results in a better employment performance. ^{2/} The chapter also discusses the causes of the lower wage growth in the Netherlands. An important reason might have been a broad consensus on the necessity of wage moderation; another reason probably was the relatively rapid growth of the labor force.

2. Developments in employment, wages, and the labor force

In 1983-1993, employment in the Netherlands grew at an annual rate of about 2 percent, well above the European Union (EU) average of 0.5 percent, and in line with employment growth in the United States. (Chart 1, top panel). The strong growth of employment during this decade stands in sharp contrast to the 1970-1982 period, in which employment in the Netherlands was stagnant (Chart 1, bottom panel).

Why was employment growth in the Netherlands faster than in other countries? An important feature of the developments in the Dutch labor market has been a sharp increase in part-time employment. Currently, about one in three employees works part-time, far more than elsewhere in Europe (Table 1). When measured in terms of hours worked, the rise in employment in the Netherlands during 1983-1993 was 11 percent, only about half the rate of increase in terms of persons employed, but still substantially above that in other European countries (Table 2). Thus the growth in employment

^{1/} Prepared by Bas Bakker.

^{2/} Another way that wage growth might affect employment, is through its effect on output growth. The impact of wages on growth is, however, ambiguous. On the one hand, wage increases raise labor costs, and thereby make production less profitable; on the other hand, wage increases raise aggregate demand, which might stimulate output. In a cross section analysis for eight industrial countries in 1983-1993, no correlation between wage and output growth could be found.

was due only in part to the sharing of work among an increasing number of part-time employees, and other factors must also have played a role.

Table 1. Part-Time Employment as Percentage of Total Employment, 1992

Country	Part-time employment Percentage
Greece	4.8
Spain	5.8
Italy	5.9
Luxembourg	6.7
Portugal	7.3
Ireland	9.1
Belgium	12.4
France	12.7
Germany	14.4
Denmark	22.4
United Kingdom	23.2
Netherlands	34.5
EUR-12	14.2

Source: Eurostat, *Labor Force Survey, Results 1992*.

Table 2. Employment Growth, 1983-1993

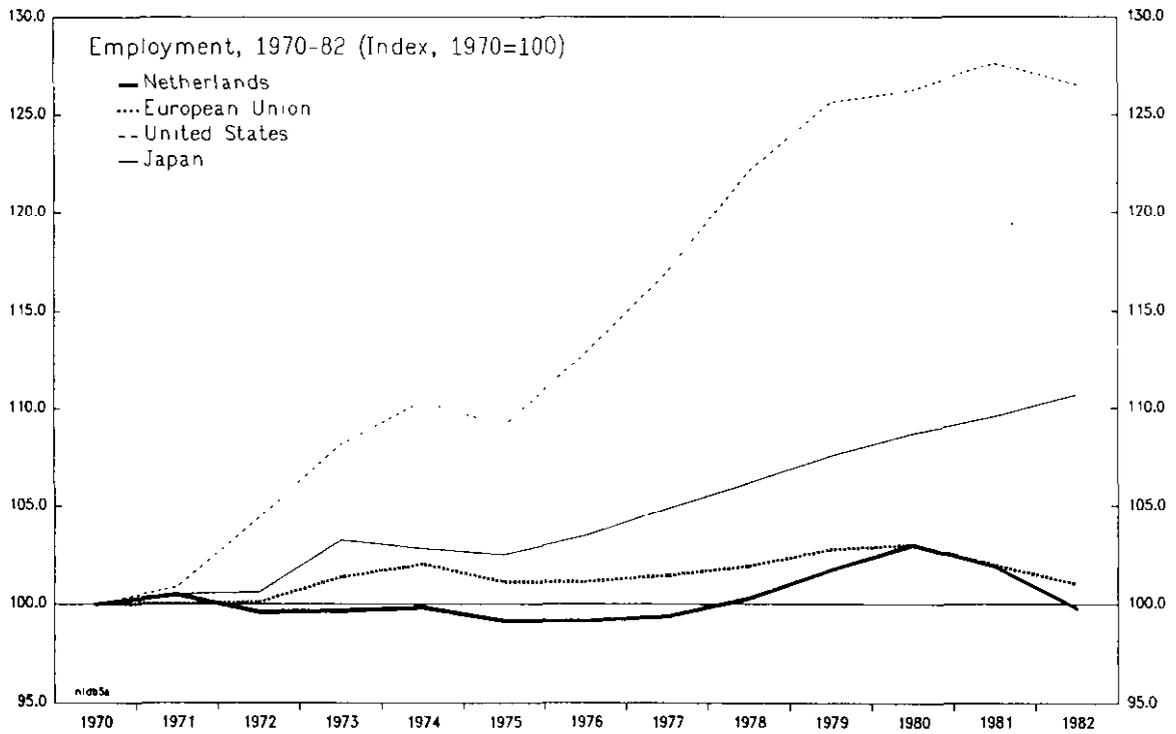
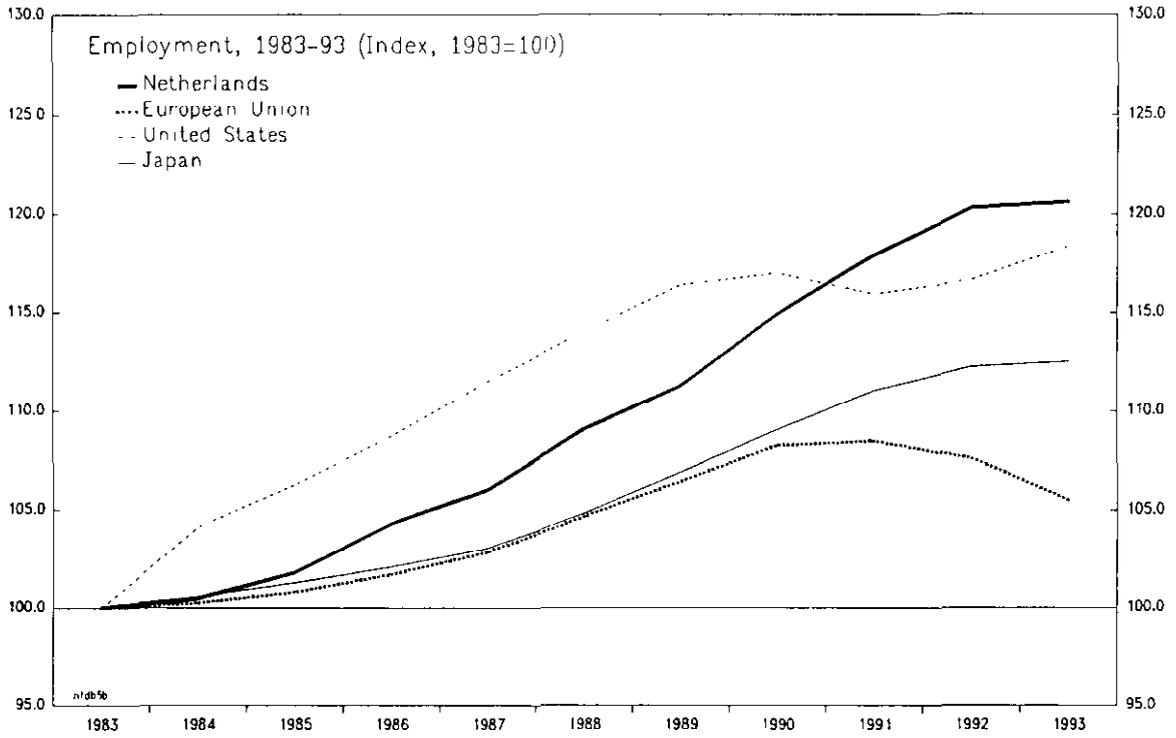
	In persons	In hours	% hours worked per person (Percent change)
Netherlands	21	11	-8
United States	18	17	-1
Japan <u>1/</u>	13	6	-6
Germany	10	1	-8
Spain	6	-2	-7
France <u>1/</u>	2	-1	-3

Source: OECD, *Economic Outlook, Employment Outlook* (July 1994); and staff calculations.

1/ Change in hours worked refers to 1983-1992.

CHART 1
NETHERLANDS

Employment, 1970-1993



Source: OECD, Economic Outlook and staff calculations.

An obvious candidate for explaining the relatively rapid employment growth in the Netherlands is the very moderate growth of wages during the past decade. While in the 1970s real wages in the Netherlands grew in line with wages in other European countries, in the 1983-1993 period real wage growth in the Netherlands was substantially lower (Chart 2). An important reason for the relative slow wage growth might have been a large increase in the labor force. In 1983-1993, the Dutch labor force grew substantially faster than in most European countries, and at about the same rate as in the United States. Underlying the rapid increase was both an increase in the working age population, and a rise in the participation rate (Chart 3). The rise in the participation rate was due to increasing participation of women, while the participation rate of men did not change much over this period. The participation rate of women in the Netherlands used to be well below the European average, but had risen slightly above it by 1992 (Table 3). Although the participation rate in the Netherlands--when measured in persons--is above the European average, the number of hours worked per person in the working age population is relatively low. As discussed above, the incidence of part-time work in the Netherlands is much higher than in other European countries. If the net participation rate is adjusted for the difference in hours worked, it is well below the European average (Table 3).

Another factor explaining the slow wage growth may have been a policy of wage moderation based on a consensus among unions, employers and government to restrain wage growth. A need for wage moderation was first felt in the early 1970s. In the 1960s a tight labor market and rising taxes and social security premiums had led to substantial increases in real wages. During the 1950s and 1960s output and employment had grown in tandem, but in the late 1960s employment stopped rising, although output continued to grow broadly at the same pace. As output growth was sustained, the shortfall in employment growth could not be explained by deficient demand. A non-Keynesian explanation was offered in 1973 by the Central Planning Bureau. Making use of a vintage model of production capacity, the Central Planning Bureau showed that excessive wage growth leads to rapid economic obsolescence of older vintages. As older vintages are replaced by newer ones, labor productivity rises, and employment declines. The case for wage moderation was strengthened by the two oil shocks in the 1970s. As wages were indexed, the large terms-of-trade deterioration had a disproportionately strong impact on profits. The profit share declined precipitously, and, especially after the second oil crisis, unemployment rose sharply. Against this background, a consensus emerged to restore profitability of companies through wage moderation.

In late 1982, unions and employers organizations concluded a wage agreement on a national level. In return for moderation of wage growth, employers would reduce unemployment through early retirement, and a

Table 3. Net Participation Rates, 1992

	Average hours worked			Net participation rates 1/			Adjusted net participation rates 2/		
	total	male	female	total	male	female	total	male	female
Belgium	38.00	40.80	33.80	49.60	61.20	38.90	48.58	59.45	38.56
Denmark	35.40	38.50	31.90	68.10	74.10	62.40	62.13	67.93	58.37
Germany	38.20	41.10	34.10	58.70	70.60	47.90	57.79	69.09	47.90
Greece	44.00	45.60	41.00	48.60	64.40	34.20	55.11	69.92	41.12
Spain	40.90	42.30	38.10	48.10	64.10	33.40	50.70	64.56	37.32
France	38.80	41.60	35.40	55.50	64.60	47.30	55.50	63.98	49.10
Ireland	41.90	45.70	35.30	52.60	68.70	36.80	56.80	74.75	38.10
Italy	39.60	41.20	36.50	48.80	64.40	34.50	49.81	63.17	36.93
Luxembourg	39.80	41.80	36.30	53.60	68.70	39.10	54.98	68.37	41.62
Netherlands	33.10	37.90	25.70	58.00	70.30	46.10	49.48	63.44	34.74
Portugal	42.60	44.60	40.20	59.40	70.80	49.50	65.22	75.18	58.35
United Kingdom	38.10	44.40	30.30	62.20	72.90	52.10	61.08	77.07	46.29
EUR-12	38.80	42.00	34.10	55.40	67.80	44.00	55.40	67.80	44.00

Source: Eurostat, Labor Force Survey, Results 1992.

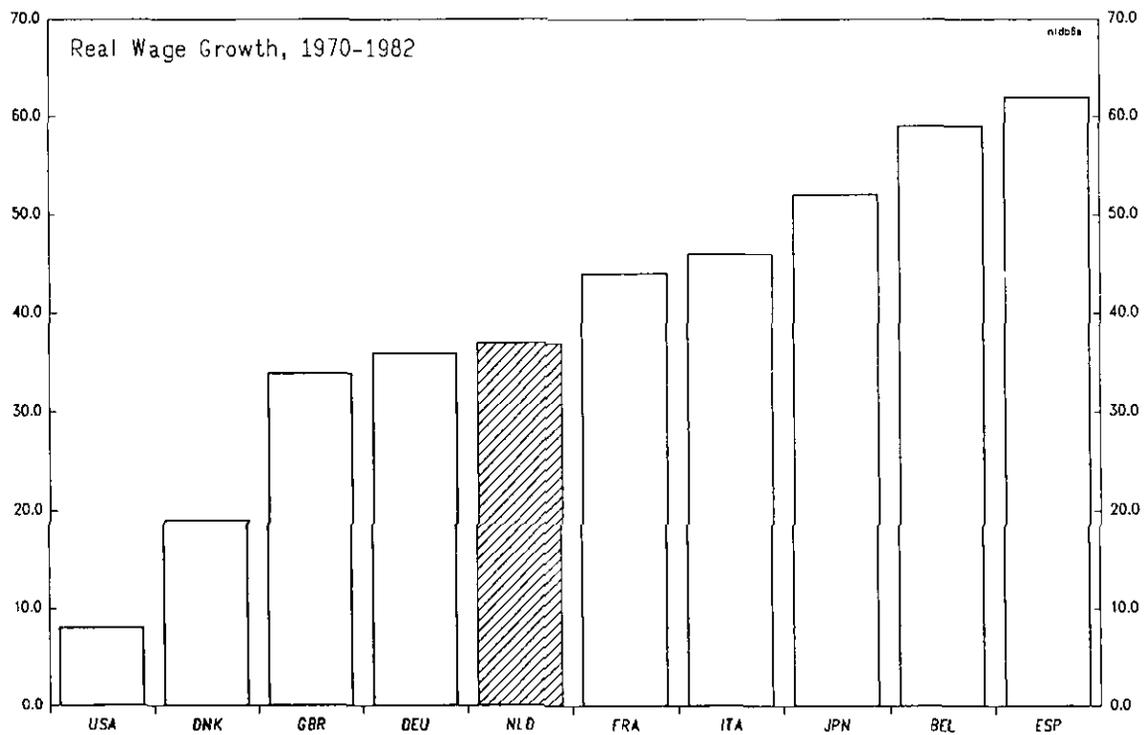
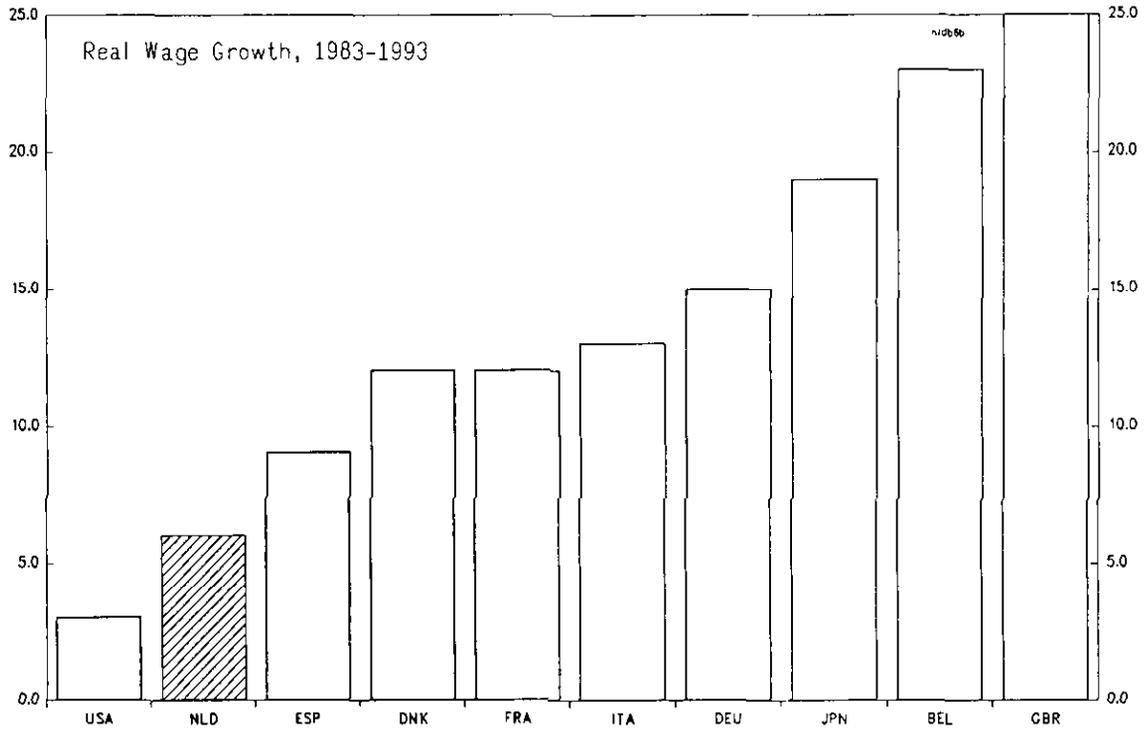
1/ Net participation rate is the percentage of the population between 15 and 64 which is employed.

2/ Participation rates have been adjusted for hours worked.

CHART 2
NETHERLANDS

Real Wage Growth, 1970-1993

(Cumulative Growth, In Percent)



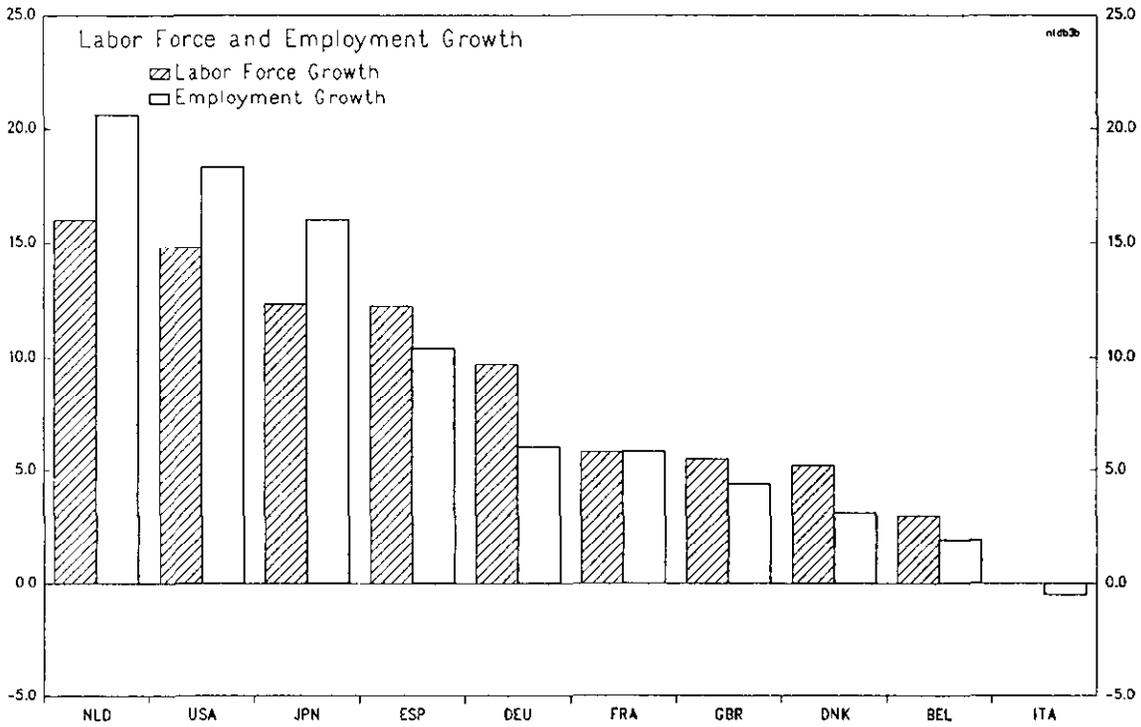
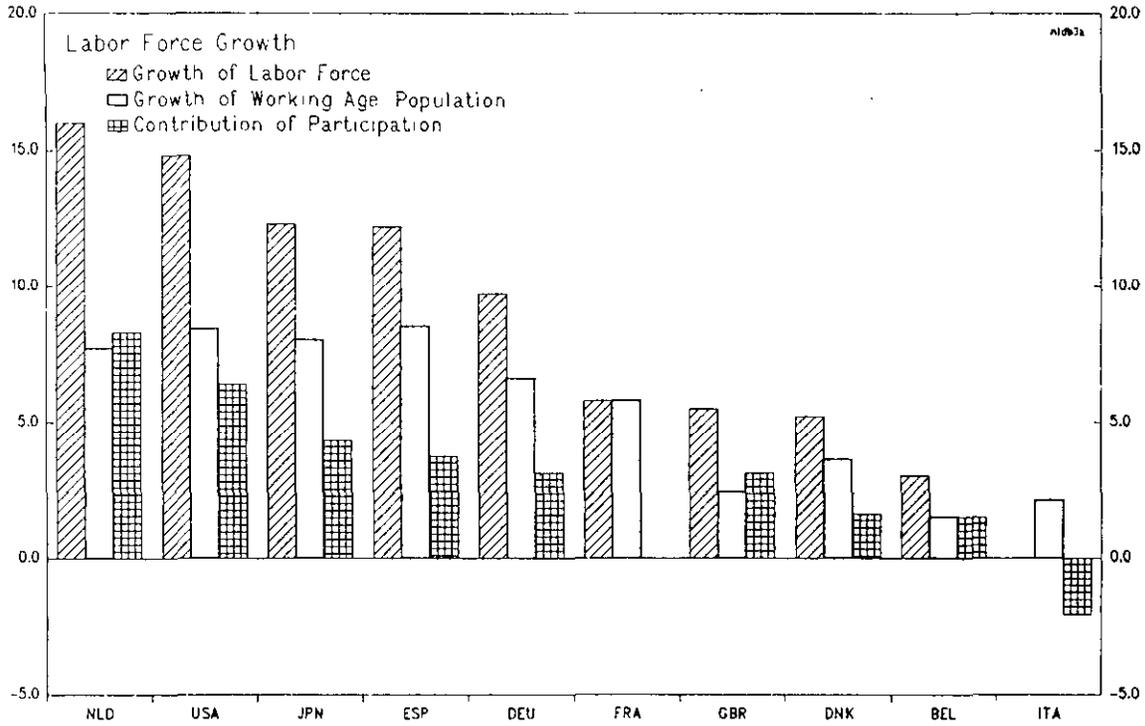
Source: OECD, Economic Outlook.

Note: Real wages refer to compensation per employee, deflated by the consumption deflator.

Countries are: BEL=Belgium, DNK=Denmark, FRA=France, DEU=Germany, ITA=Italy, JPN=Japan, NLD=Netherlands, ESP=Spain, GBR=United Kingdom, USA=United States.

CHART 3
NETHERLANDS

Labor Force Growth, 1983-1993
(Cumulative Growth, In Percent)



Source: OECD, Economic Outlook.

Countries are: BEL=Belgium, DNK=Denmark, FRA=France, DEU=Germany, ITA=Italy, JPN=Japan, NLD=Netherlands, ESP=Spain, GBR=United Kingdom, USA=United States.

reduction of working hours. ^{1/} As noted above, the growth of nominal and real wages slowed markedly in the 1980s. The profit share recovered substantially, regaining by the late 1980s the level in the late 1960s.

As there is almost universal consensus in the Netherlands on the necessity of wage restraint, it is difficult to assess what exactly has been the role of government policy in wage moderation. After 1982, the government never directly interfered in wage negotiations--although it threatened to do so on a number of occasions. Still, the government has lowered taxes or social security premia, with the explicit goal of promoting wage restraint, on several occasions.

Given the relatively large increase of the labor force in the Netherlands in the 1980s, slow growth of wages might have been expected. However, a substantial part of the labor force growth was due to a rise in participation rates, which probably was at least partly caused by the increase in employment. Moreover, given the existence of rigidities in the Dutch labor market, similar to those in other European labor markets, it is not obvious that a larger increase in labor supply would automatically result in more restrained growth of wages. Thus, it is not unlikely that the national consensus on wage restraint has been an important factor underlying the moderate wage growth in the Netherlands.

3. The link between wage growth, labor productivity, and employment

The relatively favorable employment performance in the Netherlands was accompanied by slower growth in labor productivity. With output growth in the Netherlands having been near the average of industrial countries in 1983-1993, and employment rising faster than elsewhere, productivity growth was the lowest (Chart 4). ^{2/} This section examines the relationship between real wage and labor productivity.

^{1/} The agreement was not binding, but rather advocated that the collective bargaining at the level of sectors of industry and individual enterprises should be aimed both at a recovery of profitability and a redistribution of existing jobs. Still, in the collective bargaining that followed the agreement between employers' and employees' organizations, final agreement was reached for 1.65 million employees (71 percent of the employees involved, and about a third of all employees in the private sector), about moderation of wage growth and reduction of working hours.

^{2/} The difference in labor productivity growth between the Netherlands and other countries is smaller than is suggested by Chart 4, as no adjustment is made for the change in number of hours worked per employee. However, even if such an adjustment is made, productivity growth in Holland was comparatively low.

An increase of real wages will induce a substitution of capital for labor, and thereby raise labor productivity. 1/ An increase in labor productivity brought about this way, would have a detrimental effect on employment. 2/ The OECD (1994b, p. 25), in its assessment of trends in employment and productivity in the European community argued that strong productivity growth in Europe is to a large extent caused by labor-shedding: "Weak employment growth, . . . , has been accompanied by strong productivity growth, *achieved mostly through labor-shedding* in traditional sectors rather than through shifts of production to high-technology and skill-intensive activities (*italics added*).

The impact of real wages on labor productivity has been confirmed by several authors. 3/ Drèze (1986), using annual figures for 1960-1986, examined the impact of real wage growth on labor productivity for eight European countries and the United States. Drèze found that in Europe there is a distinct influence of real wage growth on labor productivity. It contributed to labor productivity growth by as much as 2 percent to 2.5 percent per year until the late seventies; thereafter its contribution started to decline towards levels of 0.5 to 1 percent around 1986. In the United States, the contribution of real wage growth to labor productivity is negligible. Gordon (1987) examined the impact of wages on productivity in manufacturing in Europe, the United States, and Japan, using annual figures for the 1964-1984 period. He found that real wage growth contributed significantly to labor productivity growth in Europe; it did not, however, do so in the case of the United States and Japan.

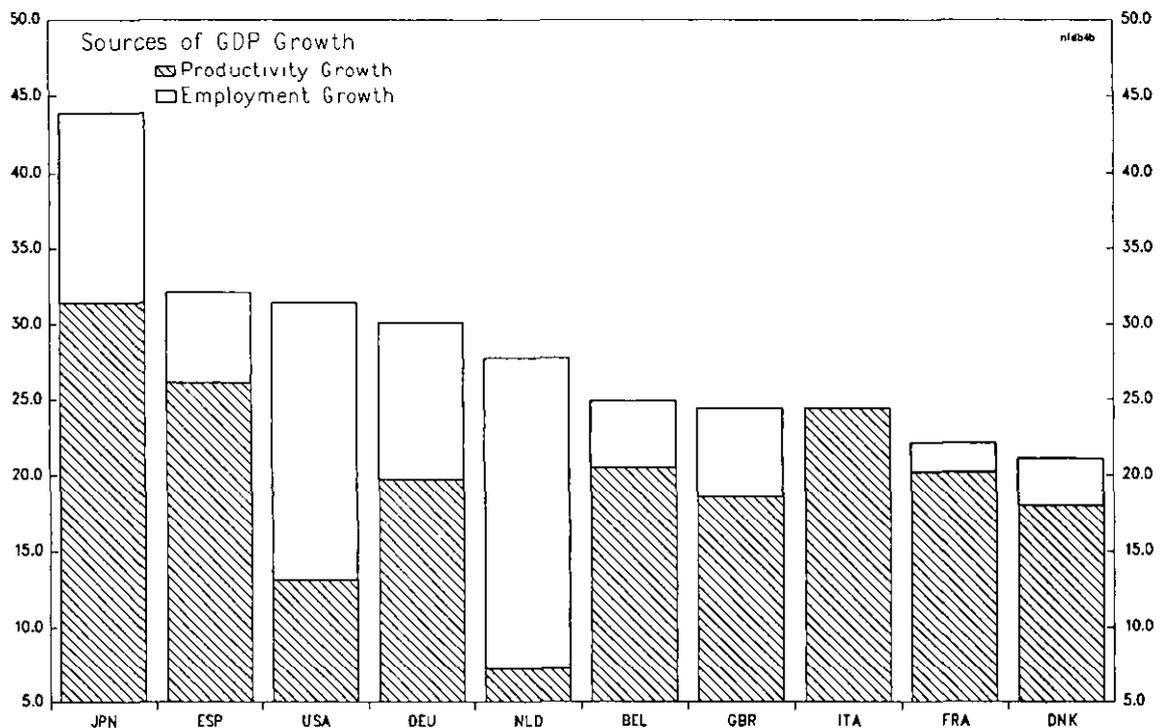
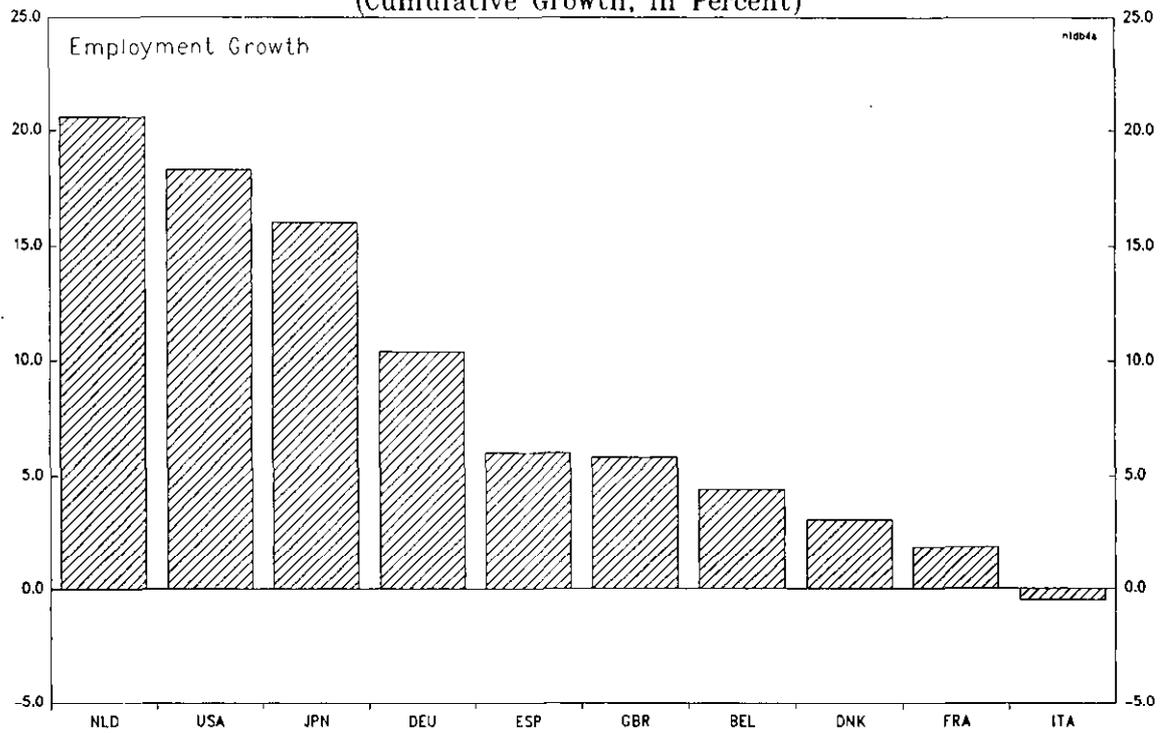
In the rest of this section, the impact of real wage increases on productivity growth will be empirically analyzed, using a simple model. It is assumed that the production function is Cobb-Douglas, that technical progress is labor-augmenting, and that firms determine the capital-labor

1/ There may also be another link from wage growth to labor productivity growth. Rapid wage increases erode profits, and may induce firms to increase efficiency. With eroding profits, firms might be keener on increasing efficiency, than when profits are high and stable.

2/ An increase in labor productivity due to technical progress, on the other hand, need not be detrimental to employment. Technical progress decreases costs, and thus provides the opportunity to lower prices and, hence, raise output.

3/ There may of course also be a link from productivity growth to wage growth. If productivity grows fast, profits will increase, which will induce labor to claim higher wages. This mechanism may be especially relevant when firms are able to increase their productivity, by catching up with foreign technology. The two mechanisms might also interact: high wage growth leads to high productivity growth, which in turn leads to fast wage growth.

Employment and Productivity in Selected Countries, 1983-1993 (Cumulative Growth, In Percent)



Source: OECD, Economic Outlook.

Productivity growth is calculated as the increase in production per employee.

Countries are: BEL=Belgium, DNK=Denmark, FRA=France, DEU=Germany, ITA=Italy, JPN=Japan, NLD=Netherlands, ESP=Spain, GBR=United Kingdom, USA=United States.

ratio so as to minimize production costs. ^{1/} It is easily shown that this implies a capital-labor ratio that is proportional to relative labor costs:

$$\ln\left(\frac{K}{L}\right) = C_0 + a(t) + \Phi(\Lambda) \ln\left(\frac{W/P}{Z/P}\right) \quad (1)$$

where $a(t)$ denotes labor augmenting technical progress, W/P and Z/P stand for (real) labor and capital usage costs, respectively, and Λ is the lag operator. The lag polynomial function represents the slow adjustment of the capital-labor ratio to relative labor costs. Substituting the capital-labor ratio into the Cobb-Douglas function itself, we can derive an expression for the output-labor ratio:

$$\ln\left(\frac{Q}{L}\right) = C_1 + a(t) + \alpha \Phi(\Lambda) \ln\left(\frac{W/P}{Z/P}\right) \quad (2)$$

Following, among others, Sneessens and Drèze (1986), it is assumed that the long-term real interest rate, and hence the real cost of capital, is constant. Rewriting equation (3) in growth rates, using lower case for growth rates, now yields:

$$q-1 = \theta + \sum_{j=0}^{\infty} \beta_j (w_{-j} - p_{-j}) \quad (3)$$

where θ denotes the growth rate of technical progress. It is assumed that employment growth reacts with some lag to output growth, and hence, that labor productivity growth is a positive function of the current output growth rate, and a negative function of lagged output growth. Thus, we finally get the following specification:

$$q-1 = \theta + \sum_{j=0}^{\infty} \beta_j (w_{-j} - p_{-j}) + \gamma_0 q - \sum_{j=1}^{\infty} \gamma_j q_{-j} \quad (4)$$

^{1/} Results presented here do not hinge on the exact type of production function used. For instance, if the production function is C.E.S. instead of Cobb Douglas, the capital-labor ratio will depend on relative factor prices as well.

This equation was estimated for the manufacturing sector in eight industrial countries (the United States, Japan, Germany, France, Italy, the United Kingdom, Canada, and the Netherlands), using quarterly data for the 1974:1-1993:4 period. 1/ We restricted the empirical analysis to the manufacturing sector, because quarterly figures on the number of hours worked were available only for this sector. Table 4 shows the estimation results. 2/ Real wage growth has a statistically significant impact in all countries, except Italy. For the United States, for instance, a one percent real wage increase is associated with a 0.35 percent productivity increase. For the Netherlands the corresponding productivity increase is 0.41 percent, while for Canada it is even larger, at 0.68 percent. 3/

1/ The source of these data is the IMF's *Competitiveness Indicators Database*.

2/ For each country, we tried several lags for both real wage growth, and output growth; we only reported the final specification.

3/ These figures can be derived by adding the coefficients for both current and lagged real wage increases.

Table 4. Time Series Estimation Results

$$\text{Regression: } q_t - l_t = \underline{\theta} + \sum_i \beta_i (w_{t-4i} - p_{t-4i}) + \sum_i \gamma_i q_{t-4i}$$

where

q_t = four quarter growth rate of output in manufacturing, i.e.

$$q_t = 100 * \log(Q_t / Q_{t-4});$$

l_t = four quarter growth rate of employment in manufacturing (measured in hours)

$w_t - p_t$ = four quarter growth rate of real wages. (Wages are deflated by the value added deflator).

	independent variables					R^2 (adj)
	constant	$w_t - p_t$	$w_{t-4} - p_{t-4}$	q_t	q_{t-4}	
country						
U.S.	1.38 (2.57)	0.35 (2.40)		0.22 (2.84)	-0.16 (3.39)	0.52
U.K.	2.62 (7.48)	0.17 (3.54)		0.43 (10.11)	-0.23 (6.31)	0.64
France	2.15 (13.35)	0.25 (4.94)		0.74 (11.58)	-0.33 (-5.65)	0.83
Germany	1.23 (2.96)	0.40 (5.18)		0.42 (8.22)	-0.23 (4.24)	0.71
Italy	2.45 (6.84)	0.00 (0.12)	0.11 (1.88)	0.68 (19.76)	-0.28 (6.96)	0.93
Netherlands	1.25 (1.88)	0.17 (2.66)	0.24 (3.09)	0.85 (13.22)	-0.27 (4.05)	0.83
Canada	0.10 (0.28)	0.60 (9.69)	0.08 (2.62)	0.48 (11.64)	0.09 (1.89)	0.86
Japan	1.00 (2.13)	0.18 (4.32)		0.64 (21.36)	-0.09 (1.93)	0.81

The dependent variable is the growth rate of labor productivity in manufacturing. The t -statistics are Newey-West corrected t -statistics, that take into account moving average errors created by the overlapping of forecasting horizons as well as conditional heteroskedasticity.

The above regressions may underestimate the impact of wage growth on labor productivity growth. If there is not much variation over time in real

wage growth--as was, for instance, the case in Italy--a time series analysis will not show much impact of real wage growth, even if such an effect exists. Therefore, we also carried out a cross section analysis, linking cumulative labor productivity growth to cumulative real wage growth and production growth for both the periods 72:1-82:4 and 83:1-93:4. The specification we estimated for the cross section analysis is the following:

$$cq-cl = \alpha + \beta(cw-cp) + \gamma cq \quad (5)$$

where cq is cumulative production growth over the 83:1-93:4 (or 72:1-82:4) period; cl cumulative employment growth, and $cw-cp$ cumulative real wage growth.

The results for the time period 83:1-93:4 are shown in Table 5. 1/ The first row shows that real wage growth has a significant impact on productivity growth. A one percentage point increase in real wage growth is associated with a 0.62 percentage point increase in productivity growth. The second and third row show that, when regressed separately, output growth has no impact on productivity, whereas real wage growth has a very strong effect.

Table 5. Cross Section Analysis 83:1-93:4

dependent variable	independent variables			
	constant	cq	cw-cp	R ²
cq-cl	22.3 (4.22)	-0.16 (0.90)	0.62 (4.21)	0.80
cq-cl	20.08 (4.37)		0.55 (4.45)	0.76
cq-cl	31.72 (3.42)	0.23 (0.77)		0.09

t-statistics are between parentheses.

1/ In the cross section analysis it is implicitly assumed that the rate of technical progress is the same in each country. If the rate of technical progress is not the same across countries, but instead linked to, for instance, the rate of output growth, then the coefficients in the cross section analysis will be biased.

Table 6 shows that the results are similar for the 72:1-82:4 period. Real wage growth has a strong impact on productivity growth; its coefficient is virtually the same as for the 83:1-93:4 period. 1/

Table 6. Cross Section Analysis 72:1-82:4

dependent variable	independent variables			R ²
	constant	cq	cw-cp	
cq-cl	3.42 (0.57)	0.03 (0.20)	0.72 (5.86)	0.93
cq-cl	32.43 (3.86)	0.56 (2.13)		0.43
cq-cl	3.11 (0.59)		0.74 (8.73)	0.92

t-statistics are between parentheses.

We conclude from both the time series and the cross section analysis that the impact of real wage growth on labor productivity is considerable. Growth in real wages and labor productivity during 1972-82 and 1983-93 is shown in Chart 5. The chart confirms the link between real wage and productivity growth. It also shows that whereas in the 1972-1982 period, Dutch real wage growth and productivity growth were second only to Japan, in the 1983-1993 period real wage growth was the slowest, and productivity growth almost the lowest of the countries considered here. 2/

4. Conclusion

In the period 1983-1993 employment growth in the Netherlands was well in excess of that in other European countries. The slow growth of real wages, which was well below that in most other industrial countries, seems to have been a factor in the relatively favorable employment performance. With slow wage growth, there was less need to substitute capital for labor, and as a result employment growth was maintained while labor productivity did not increase as much as in other European countries.

1/ The positive link between productivity and output growth that is suggested in the second row of the Table, no longer is significant once Japan is excluded.

2/ Although productivity in Dutch manufacturing grew relatively slowly in the 1980s, its level by some calculations is still the highest in the world (Maddison and van Ark (1994)). Thus, productivity growth might be expected to be slower than elsewhere.

II. The "Forbidden Zone:" Beyond the Statutory Minimum Wage ^{1/}

In many countries, a statutory minimum wage level imposes a lower limit on market wage rates and causes workers with a productivity below this minimum to not be hired by firms in the market sector of the economy. In the Netherlands, the effective wage floor in the labor market turns out to be well above the level of the statutory minimum wage, which itself is relatively high by international standards. This appendix describes what determines the effective market wage floor, below which lies a "forbidden zone" where no jobs exist.

Since 1983, the gap between the statutory minimum wage in the Netherlands and other countries has gradually been narrowed (Chart 6, upper panel). This was accomplished through a 3 percent reduction in 1983 followed by a nominal freeze (interrupted only during 1990-92, when the statutory minimum was raised by almost 9 percent). Nonetheless, by 1993 the statutory minimum wage was still relatively high. ^{2/} The near stagnation in the level of the statutory minimum wage since 1983 did not lead to a rise in the number of workers earning the statutory minimum; on the contrary, there was a decline from 226,000 in 1983 to 110,000 in 1993 (from 5.8 percent of the employed labor force to 2.3 percent).

The decline in the number of workers earning the statutory minimum wage coincided with a rise in minimum wage scales stipulated in collective bargaining agreements. On average, such wage scales were 4.4 percent higher than the statutory minimum in 1983, while in 1993 the difference had widened to 12.4 percent. ^{3/} Taking into account that actual wages paid under collective bargaining agreements are as a rule higher than the minima stipulated, actual minimum wage rates for those covered by collective bargaining agreements are currently on average nearly 20 percent higher than the statutory minimum.

There is much variation in minimum wage scales across sectors in the Netherlands. In the Netherlands, collective bargaining agreements cover directly some 60 percent of private sector employees, and another 10 percent through the practice of declaring such agreements binding across sectors (this practice is also common with varying degrees of strictness in some other European Union countries, such as Belgium and Germany). In 1993, the gap between the lowest wage scale in the agreements and the statutory minimum wage varied from negligible (in retail trade) to 34 percent (in construction). Minimum wage scales in collective bargaining agreements in the Netherlands are generally higher than in the U.K., Austria, and Sweden,

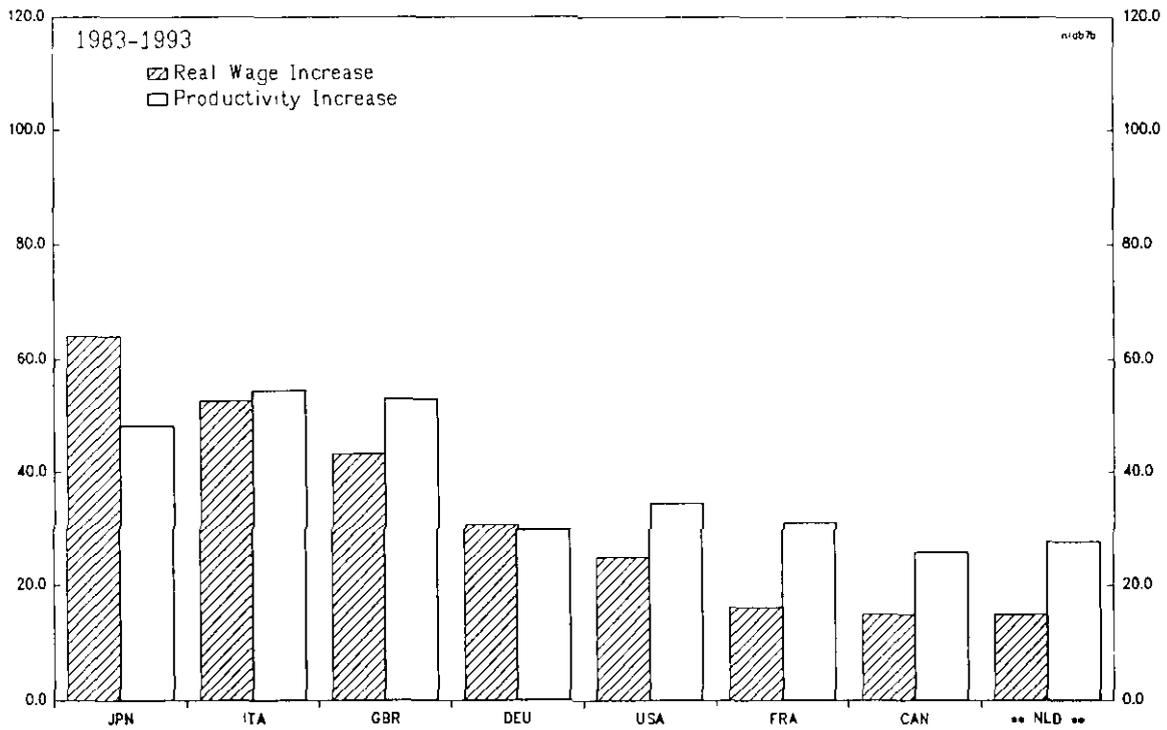
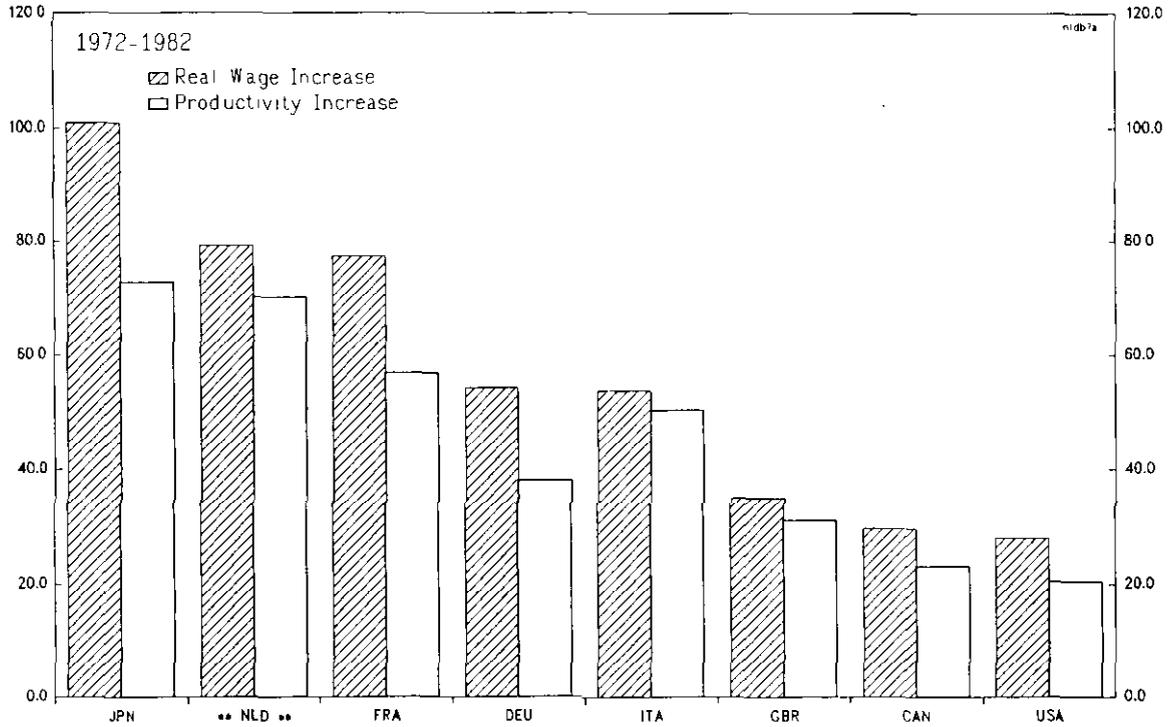
^{1/} Prepared by Frank Lakwijk.

^{2/} This chapter concentrates on the minimum wage for workers 23 years of age or older. For younger workers, the minimum wage is an age-dependent fraction of the statutory minimum wage for workers age 23 and older (Chart 7).

^{3/} Between 1983 and 1993, lowest wage scales rose nearly as much as average contract wages (by 19.8 and 21.6 percent, respectively).

CHART 5
NETHERLANDS

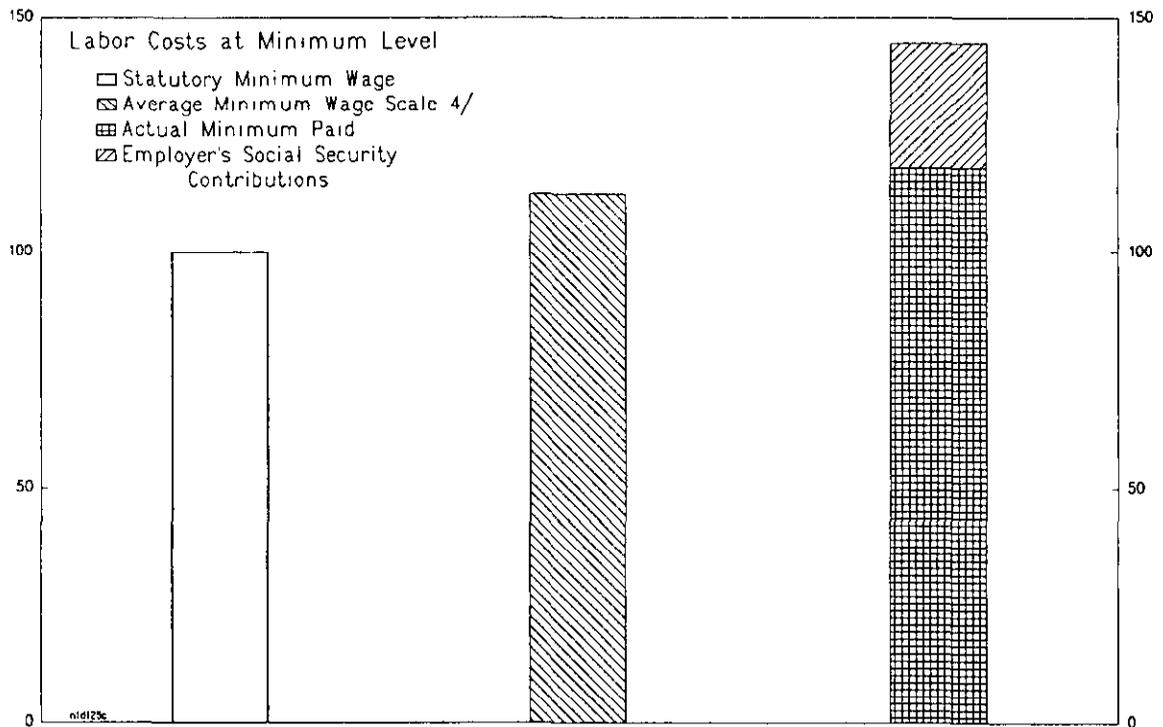
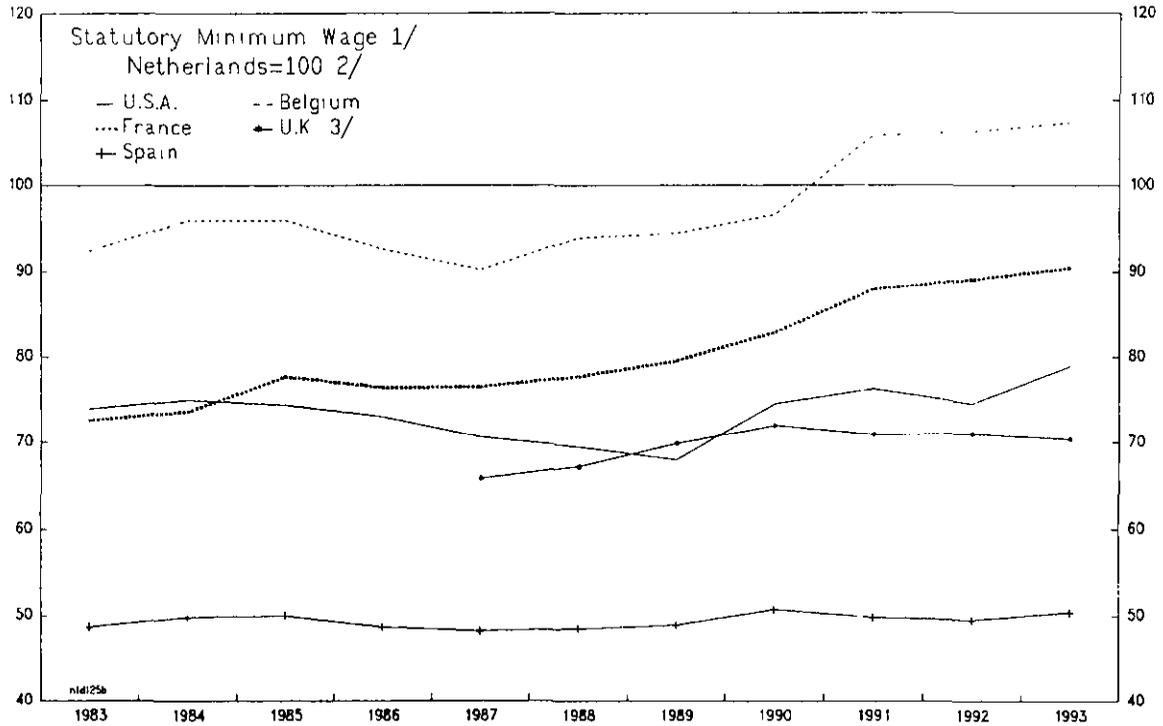
Manufacturing: Real Wages and Productivity
(Cumulative Growth, In Percent)



Source: IMF, Competitiveness Indicators Database.

Countries are: CAN=Canada, FRA=France, DEU=Germany, ITA=Italy, JPN=Japan,
NLD=Netherlands, GBR=United Kingdom, USA=United States.

- 12b -
CHART 6
NETHERLANDS
Minimum Wage



Sources: Ministry of Social Affairs and Employment, Social Note 1995; and staff estimates.

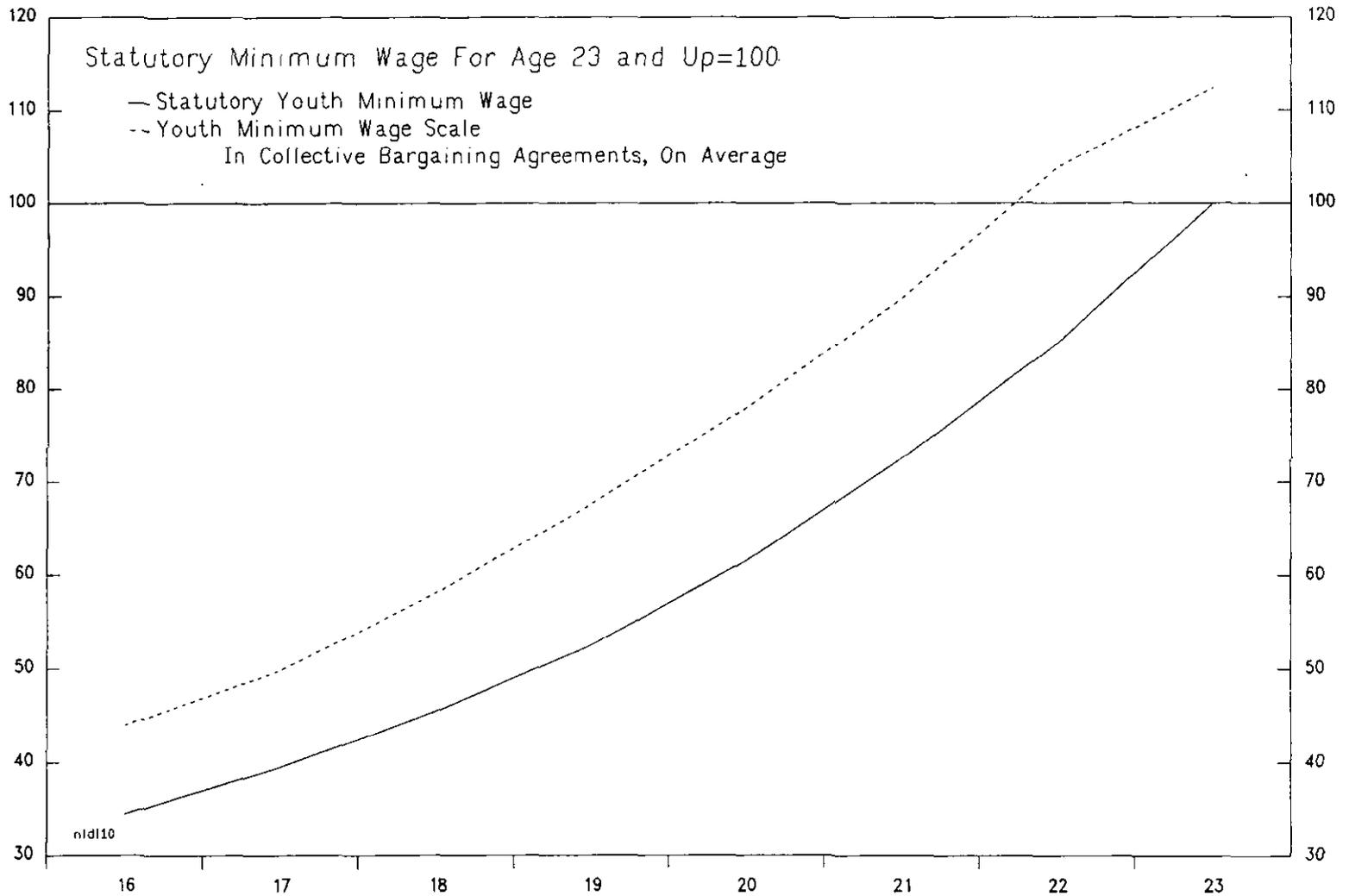
1/ Using purchasing power parities.

2/ Age 23 and up.

3/ Minimum wage in textile sector.

4/ In collective bargaining agreements.

CHART 7
NETHERLANDS
Youth Minimum Wage, 1993



Source: Ministry of Social Affairs and Employment, Social Note 1995



roughly the same as in Belgium, and lower than in Germany, Norway, and Denmark.

At the minimum level employers not only pay a wage that is on average (in the sectors where a collective bargaining agreement applies) some 20 percent above the statutory minimum, but also pay social security contributions amounting to about 20 percent of the wage. All in all, the cost of hiring a worker at the lowest level, therefore, amounts to some 145 percent of the statutory minimum wage (Chart 6, lower panel).

To help ameliorate the problem of high labor costs at the low-pay end of the labor market, the government intends to no longer declare binding collective bargaining agreements where the lowest wage scale is above the statutory minimum. This change is to take effect in 1996, and already caused some agreements concluded in 1995 to add a wage scale at the statutory minimum level. The statutory minimum wage is to remain unchanged in 1995 and be indexed to half the contract wage growth in the private sector during 1996-98; dispensation from the statutory minimum wage for jobs to be filled by certain types of workers, for example long-term unemployed, is to be introduced at the beginning of 1996. The government also intends to concentrate tax and social security contribution rate reductions on the contributions paid by employers for lower paid workers. A beginning was made in 1995, with the introduction of a deductible for one component of employers' social security contributions. 1/

Even if the measures to reduce labor costs at the minimum level prove effective at increasing the demand for labor, it may turn out that there are significant labor supply constraints at the low end of the market, despite the fact that a majority of the large number of unemployed are only skilled to work in low wage jobs. Minimum social security benefits are relatively high 2/ and give rise to reservation wages--which are determined by the level of social benefits as well as other financial and nonfinancial (opportunity) costs of working--that are often higher than the statutory minimum. 3/ In fact, it is possible that minimum wage scales in collective bargaining agreements have been raised well above the statutory minimum because vacancies were difficult to fill at lower wage rates. Thus, to raise employment at the low pay end of the labor market, in addition to lowering labor costs it may prove necessary to strengthen labor supply

1/ The deductible is equal to about one half of the statutory minimum wage and would lower labor costs for a (half-time) worker earning half the statutory minimum by about 5 percent of the wage. However, for a full-time worker earning around the actual minimum (about 20 percent above the statutory minimum, as explained above) the reduction is only 1 percent of the wage because the marginal contribution rate has been raised.

2/ For family breadwinners, the minimum benefit is equal to 100 percent of the statutory minimum wage. For single persons, the ratio is generally 70 percent.

3/ See "Kingdom of the Netherlands - Netherlands - Recent Economic Developments" (SM/93/43, 2/24/93), page 23.

incentives by reducing benefits and thus reservation wages. Such a reduction could be accomplished by delinking benefits from the statutory minimum wage or by an effective sanctions policy that would lower benefits for recipients unwilling to work.

III. Social Security Reform 1/

Efforts to reform the social security system, in particular in the area of sick leave and disability insurance, are described in this chapter. The first section outlines the changes that have been made in recent years, and the second discusses plans for further reform.

1. Recent reform efforts and first results 2/

Following the introduction of a generous disability insurance law for all employees in 1967 and its extension (at the minimum benefit level) to all residents in 1976, the number of fully and partly disabled rose sharply, reaching 921,000 (8.8 percent of the working age population) by the end of 1993 (Chart 8, upper panel). 3/ The rise occurred because social partners (labor unions and organizations of employers) were willing to use the disability outlet as an alternative to unemployment at a time when they had control over the admission process. Employers in this way avoided restrictive regulations on lay-offs, while affected employees received at least 80 (later 70) percent of their last earned wage until age 65 (unemployment benefits, on the other hand, were limited in duration). The social partners were able to strongly influence disability incidence because they controlled the sectoral insurance boards that handled disability claims and payments, and the government did not exercise effective oversight.

In the second half of the 1980s, the government attempted to stem the rise in the number of disabled by making changes in the disability and sick leave schemes. 4/ Benefits were reduced, and eligibility criteria tightened. However, these efforts met with little success. Social partners continued to manage the granting of disability claims and ignored changes in eligibility criteria, while the lowering of benefits was generally compensated in collective bargaining agreements that provided for supplementary benefit payments. 5/ Financing of these payments occurred on an agreement-by-agreement basis. Both the statutory and the supplementary benefits were handled by the sectoral insurance boards. A crucial aspect of the thwarting of government efforts to reduce the inflow

1/ Prepared by Frank Lakwijk.

2/ For a more detailed overview of recent reform efforts, see "Kingdom of the Netherlands - Netherlands - Selected Background Issues" (SM/94/100, 4/22/94).

3/ The number of full-year equivalent claimants is only about 14 percent lower than the total number of claimants, indicating that most disabled receive full benefits.

4/ Disability commences after one year of sickness.

5/ Sick leave and disability benefits were lowered by the government from 80 to 70 percent of the last earned wage. However, collective bargaining agreements continued to include the stipulation that a sick employee receive 100 percent of his or her net wage, while about half of the reduction in disability benefits was compensated through supplementary payments mandated in the various collective bargaining agreements.

into the disability program was the established practice of having each collective bargaining agreement reached between labor unions and organizations of employers declared binding by the Minister of Social Affairs and Employment for all firms operating in the sector. This prevented firms from escaping paying for the supplementary benefit payments.

In the early 1990s, the continued rise in incidence and cost of disability prompted the government to take new measures aimed at strengthening incentives despite attendant political difficulties. Contribution rates for sick leave insurance were differentiated by firm, and responsibility for paying the legally mandated 70 percent of wage was shifted from sectoral insurance boards to firms for the first six weeks of sick leave (two weeks for firms with fewer than 15 employees). Employers were assessed a penalty (*malus*) for each employee entering the disability program (and a *bonus* for hiring a disabled), eligibility criteria for disability were tightened further, including for existing disabled, and benefits for new entrants on the disability rolls were reduced sharply. At the same time, payment through the sectoral insurance boards of supplementary benefits compensating for any of these measures was prohibited in order to begin reducing the role of the boards.

The experience to date with these changes is mixed. Strong employer resistance to the penalties, as well as growing recognition of the sometimes limited control employers have over the disability experience of their workforce (the insurance applies to all risk, not just occupational), led to delayed implementation of the *bonus/malus* system and commensurate reduction in the incentives for employers to reduce the incidence of disability. 1/ Supplementary payments have been included in collective bargaining agreements that have, on average, compensated three quarters of the reduction in publicly mandated benefits. 2/ As a result, in the private sector the average disability benefit (statutory and supplementary) declined only slightly, from 75 to 73 percent of the last earned wage, so that the incentive for employees to take up disability has on the whole hardly changed. 3/

On the positive side, much attention has been paid to the functioning of the sectoral insurance boards, beginning with a parliamentary commission of inquiry in the fall of 1993, and this appears to have favorably influenced their adherence to the legal criteria for determining disability. The total number of disabled is not rising anymore, and actually fell in

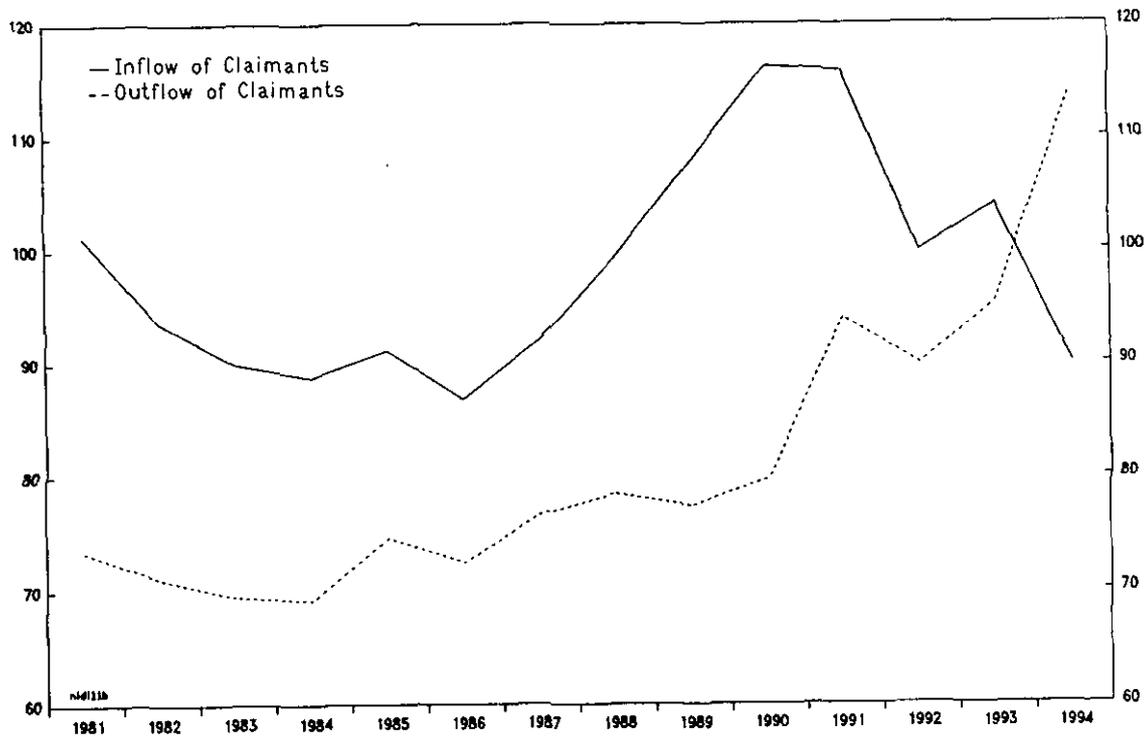
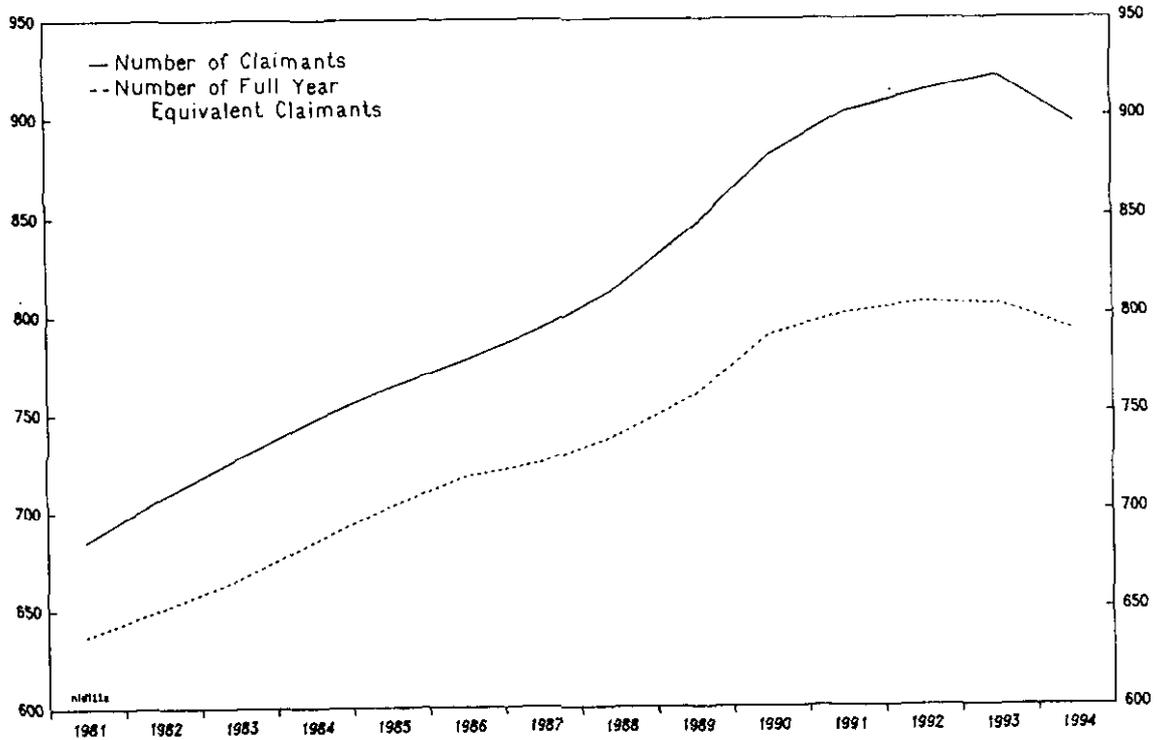
1/ Court challenges to the system by employers are ongoing.

2/ These payments have been insured with pension funds and private insurers.

3/ However, the severe reduction in publicly mandated benefits for new workers has created more differentiation. For example, for workers not covered by collective bargaining agreements, supplementary payments would only be available through disability insurance taken out individually. Such workers are likely to face substantially higher premium payments and lower benefits in case of disability.

CHART 8
NETHERLANDS

Disability Insurance Claimants
(In Thousands)



Source: Data provided by the authorities.

1994, as the inflow of disabled declined and the outflow grew (Chart 8, lower panel). Available data suggest that 25 percent of workers who would have obtained disability status in the past do not now, and that a high proportion of existing disabled currently lose their benefits after being reexamined. 1/ In addition, the average degree of disability is gradually declining (from 87.5 percent in the first half of 1993 to 85.9 percent in the first half of 1994), and the incidence of sick leave has fallen. However, the permanence of these recent changes is in doubt because underlying incentives for employees and employers to use the disability insurance scheme have changed relatively little.

The decline in the number of disabled and in their average degree of disability in 1994 implied a reduction of expenditure in the disability program by about 2 percent. The net expenditure saving in the area of social security is considerably smaller, by perhaps 50 percent, especially in the short run, because those losing their disability benefits may be eligible for an unemployment insurance benefit. The leakage is to decline gradually as those remaining unemployed lose their unemployment insurance benefits after a period ranging from 6 months to 5 years, depending on age, and subsequently drop into the (lower) welfare net.

2. Government plans for further reform

The Coalition Agreement of August 1994 outlined several changes that the new government intended to make in the area of sick leave and disability insurance. It emphasized, however, that the reforms introduced in recent years needed to be given time to work, and that any decisions on a fundamentally different role of the government in the social security system (for example, the government as a guarantor of only minimum benefits) would be postponed until the midterm review in 1996. For the time being, the level and duration of social security benefits would not be changed further (apart from the extent of their indexation to wages). The changes proposed in the Coalition Agreement pertain to the system of delivery of benefits and their financing, in particular in the area of sick leave and disability insurance. The benefit administration may be contracted out to parties other than the sectoral insurance boards (such as private insurers and pension funds, which are in many cases already involved with supplementary disability benefit payments). The Coalition Agreement also announced that the admissibility of disability claims would begin to be determined by independent organizations, that independent oversight would be established, and that efforts would be made to integrate the work of various services such as regional unemployment bureaus and local welfare offices with that of agencies involved in rehabilitation.

1/ More than 40 percent of reexaminations (using the new eligibility criteria) currently result in a loss of benefits for the worker. However, the first group that is being reexamined is that of young workers, which is not representative of the total population of disabled.

Consistent with provisions in the Coalition Agreement, the government intends to "privatize" sick leave insurance from the beginning of 1996. This means that employers will be assigned the full responsibility for payment of the legally mandated (and unchanged) benefit in case of sick leave. Thus, instead of only for the first six weeks, firms would be paying the benefit for up to a year. Employers will be allowed to seek insurance for this risk with private sector carriers or the sectoral insurance boards. 1/ The privatization is intended to improve incentives for employers to reduce the incidence of sick leave and thereby its related cost, which ultimately is borne by labor. Technical preparations for implementation are under way focussing on consistency of the plans with ILO agreements, provisions for benefit payments to temporary workers and employees of firms in financial difficulties, and treatment of disagreements between employers and employees about the validity of claims of sick leave.

A form of privatization is also intended for disability insurance, with the rational of improving incentives and reducing overall disability incidence and cost. The Coalition Agreement aimed for increasing market influences, including the introduction of differentiation in contribution rates and allowing firms to opt out of the public system and insure the disability risk of their employees privately. To facilitate differentiating contribution rates by sector, the government intends to shift payment of disability insurance contributions from employees to employers at the start of 1996 and terminate the *bonus/malus* system (which was in effect a form of contribution rate differentiation). At the same time, the possibility for firms to opt out would be introduced.

The possibility for firms to opt out of the public disability insurance system constitutes the essence of "privatization" in this area, and is to apply to new disability cases. For the existing disability claimants, it is intended to maintain the pay-as-you-go system, with some differentiation in contribution rates. 2/ The implementation of privatization depends on the formulation of appropriate financing rules, which are still being discussed. Sectoral insurance boards provide coverage on a pay-as-you-go basis, which does not require the building up of reserves and allows contribution rates to reflect expected benefit payments for the current period. Private insurers, by contrast, have to accumulate financial reserves sufficient to cover the present value of their expected future benefit payments (full funding). Private insurance would tend to be more expensive than the coverage provided by sectoral insurance boards in the early years, when

1/ From the beginning of 1995, firms will already be allowed to opt out of their arrangements with the sectoral insurance boards (after three months notice) and either self-insure or obtain private insurance. Firms with sickness incidence lower than the lowest incidence category used by sectoral insurance boards in the setting of premiums would be most likely to switch soon (some boards use three, others five, incidence categories).

2/ In order to preserve a degree of solidarity in the system, it is intended to only partly reflect past disability experience in contribution rates by sector.

there would be few "new" disabled, and firms would have little incentive to opt out. It may thus be necessary, for example, to put sectoral insurance boards under the same financing rules as private insurers in order to allow effective privatization.

IV. An Analysis of the Dutch Current Account Surplus 1/

1. Introduction

This chapter explores the main factors underlying the long-run trends of the current account in the Netherlands. In particular, it examines a number of factors that may have affected saving and investment to better understand the persistent large current account surpluses registered since the early 1980s. This current account development poses the question of the existence of structural factors that may have contributed to high saving and/or low investment in the Netherlands. Since potential sources of high saving have already been discussed in some detail, 2/ and their quantitative impact is in any case difficult to determine without recourse to a detailed empirical general equilibrium model, only a qualitative summary of the relevant factors on the saving side will be attempted for the purposes of this chapter. Instead, the bulk of the chapter will focus on possible factors that may have acted to depress investment.

From a policy perspective, it is important to distinguish between factors that are related to underlying economic trends and others that primarily reflect the impact of distortions, whether policy-induced or resulting from market deviations from perfect competition. It is only in the case of factors emanating from the presence of distortions that a welfare-improving role for public policy may exist.

2. Background

Over the last three decades, the trends of the Dutch current account have exhibited considerable variations (see Chart 9, lower panel). During the 1960s, it was essentially in balance each year, as the deficit in the trade account was roughly offset by an invisibles surplus. During the 1970s and early 1980, the trends of the current account became more mixed, with surpluses in the first half of the 1970s followed by deficits in the latter half of the decade, registering an average annual surplus of about 1 percent of GDP. Since the early 1980s, the current account has persistently recorded surpluses which averaged 3 1/4 percent of GDP per year during 1982-94. These trends are even more striking if one focuses on the trade balance, which swung from an annual deficit during 1970-81 to an average annual surplus of 3 3/4 percent of GDP during 1982-94.

In order to better understand these long-run developments in the current account of the Netherlands, it is useful to examine the trends of saving and investment (see Charts 9 and 10). 3/ In the late 1960s and

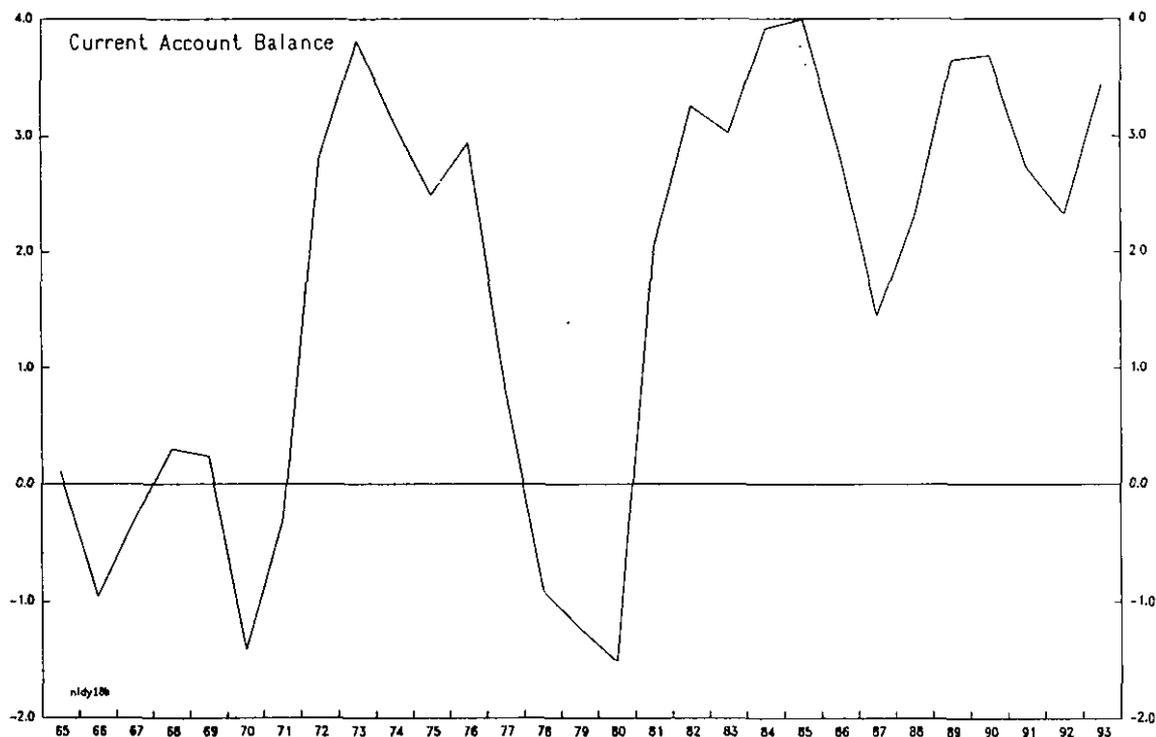
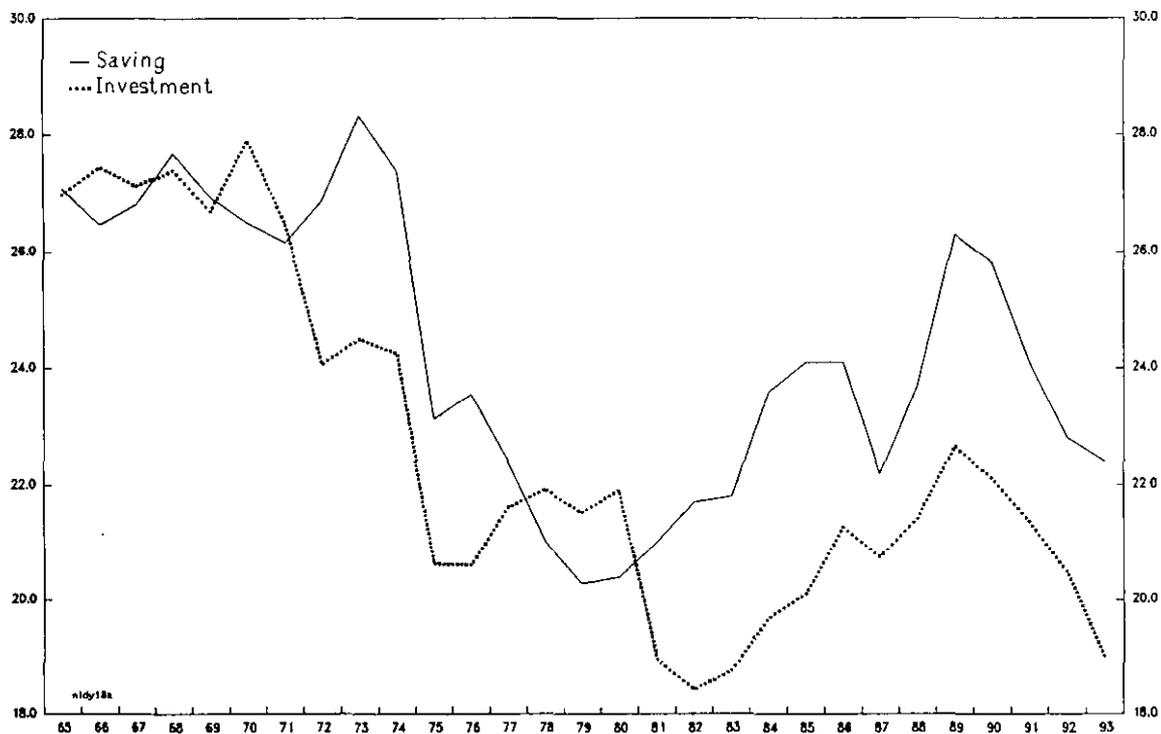
1/ Prepared by Ioannis Halikias.

2/ See Bakker (1993), I.M.F. (1993).

3/ The concept of the current account used for the purposes of this study (defined on a balance of payments basis) is not exactly equal to the difference between saving and investment (defined on a national accounts basis), due to small data discrepancies.

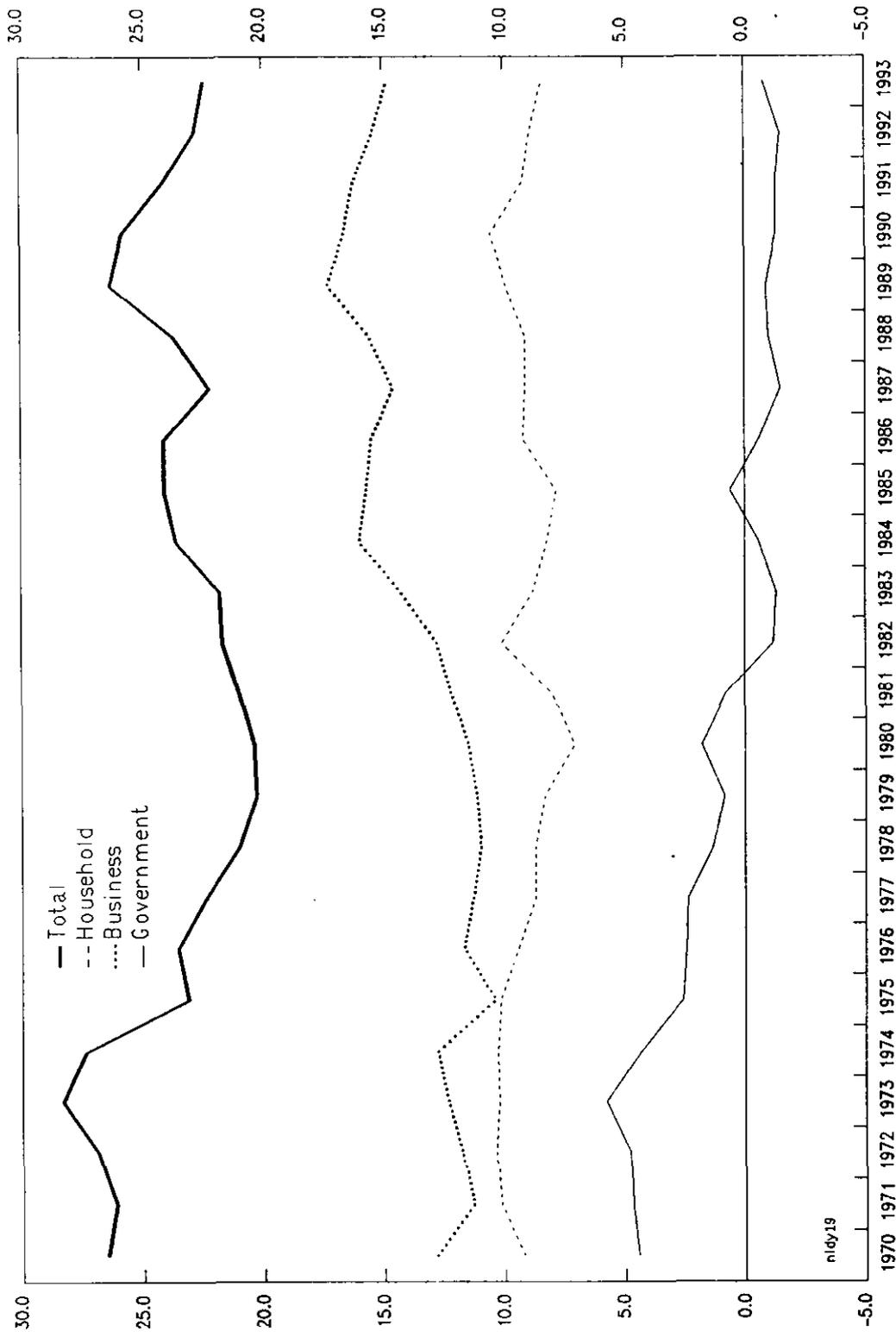
- 20a -
 CHART 9
 NETHERLANDS

Saving, Investment, and the Current Account
 (Percent of GDP)



Source: CBS, National Accounts.

CHART 10
NETHERLANDS
Saving
(Percent of GDP)



Source: CBS, National Accounts.

early 1970s, the Dutch economy was characterized by high saving and investment, of about 27-28 percent of GDP. Thereafter, the situation changed significantly. Until the early 1980s, the saving rate fell sharply, reaching a low of 20 percent by 1980. A sharp deterioration of the fiscal balance was the main reason, accounting for almost the entire decline in the saving rate between 1970 and 1982. Business and household saving also weakened during the same period, 1/ mainly under the impact of the squeeze on business profitability and the two successive international recessions. 2/ During the same period, the investment rate also fell until 1976, apparently affected by the economic downturn and the marked rise in the labor income share. After a brief swing during 1977-80, it resumed its sharp decline, reaching a low of 18 percent of GDP in 1982.

Since the early 1980s, these trends have only partially been reversed. On the one hand, the saving rate increased significantly, peaking in 1989-90 at around its 1970 level. Efforts at fiscal consolidation constituted part of the story. 3/ Much more substantial, however, was the contribution of private saving, and in particular its business component, which rose markedly as business profitability improved. On the other hand, investment, while also rising, failed to keep up with saving, peaking in 1990 at only its mid-1970s level. 4/ This asymmetric recovery of saving and investment underlies the persistence of large current account surpluses in the Netherlands since the early 1980s.

3. Sources of high saving

Saving in the Netherlands has generally been high by international standards. As the public sector's saving has been consistently negative since the early 1980s, the high saving rate reflected private sector behavior, both on the business and on the household side. In what follows, potential factors, both distortionary and non-distortionary, that may have contributed to the high private saving rate are considered in a qualitative manner.

1/ This is not inconsistent with the fact that household and business saving remained roughly constant between 1970 and 1982. In fact, one should have expected a substantial improvement in these two categories of saving, precisely in view of the fiscal deterioration. Empirical evidence for the Netherlands suggests that, while Ricardian equivalence in its extreme form is rejected, private saving typically offsets over 50 percent of a change in public saving; see, for example, den Broeder and Winder (1992).

2/ In net terms, the private saving rate also fell during this period.

3/ Note that the increase in government saving fell short of the magnitude of deficit reduction attained, as public investment bore part of the burden of fiscal consolidation.

4/ The decline in both saving and investment in the early 1990s is attributable to cyclical factors.

a. Distortions affecting business saving

Business saving constitutes the largest part of private saving, and accounts for the bulk of the increase in the private saving rate since the early 1980s. As has been demonstrated by extensive empirical work, the main determinant of business saving in the Netherlands is business profitability. Nevertheless, it has been pointed out that certain features of the Dutch fiscal system may act to boost retained earnings as a proportion of total profits, thus biasing business (and overall private) saving upward.

The most noteworthy among such fiscal aspects is probably the double taxation of dividends. While double taxation of dividends is by no means uncommon internationally, in most other countries dividends are taxed at a much lower rate relative to the income tax rate, or benefit from other favorable tax provisions. This is not, however, the case in the Netherlands, resulting in the highest rate of taxation on paid out corporate income among EU countries. ^{1/} It can be assumed that this feature of the Dutch tax system introduces an upward bias in the incentive of Dutch corporations to withhold earnings. An additional feature of the Dutch fiscal system that can be expected to work in the same direction is the non-existence of a tax on capital gains. The absence of a capital gains tax should further increase the incentive to withhold corporate earnings with an eye to driving up share prices.

The relevance of these factors for the purposes of the present study hinges crucially on the extent to which the resulting higher business saving is offset by lower household saving. In turn, this depends on the extent to which households take into account in the calculation of their permanent income the higher share prices resulting from higher retained earnings. However, empirical evidence from other countries in this area, while generally suggesting high offset rates, is mixed.

b. Distortions affecting household saving

Potential distortions that may create an upward bias in the household saving rate in the Netherlands are typically associated with the prevalence of the fully-funded supplementary pension schemes. Supplementary pensions, which cover over 90 percent of Dutch employees, are set in the context of sectoral collective bargaining agreements and are then applied to each sector in its entirety, in the context of the Dutch practice of declaring collective bargaining agreements generally binding. This "forced" nature of contractual household saving has sometimes been thought of as inducing households to oversave.

^{1/} Based on the 1991 tax laws in various countries, Gardner (1992) has estimated that the after-tax proportion of distributed profits reaching the shareholder is a mere 26 percent in the Netherlands, compared to 58 percent in Germany and 60 percent in the U.K.

The extent to which the above factors act to increase household saving beyond its socially desirable level depends on the importance of liquidity constraints, which would prevent households from reducing their non-contractual saving in order to offset any excess contractual saving. The very low level (by international standards) of non-contractual, or "free" household saving is often regarded as indicating that such liquidity constraints are indeed important. It should be emphasized, however, that the level of free saving in the Netherlands is not readily comparable to that in other EU countries, where a much larger portion of pensions is unfunded. In fact, it would be reasonable to expect higher non-contractual saving under a pay-as-you-go pension system, to the extent that households are taking into account likely future increases in contribution rates, especially in view of the prospective aging of the population.

In addition, it would appear that liquidity constraints, to the extent that they are indeed important, have been relaxed in recent years. On the one hand, it would appear that households have available a range of credit instruments to finance consumption much wider than traditional consumer credit. Most notably, a substantial part of mortgage credit is widely regarded as having effectively served as a substitute for consumer credit in recent years. 1/ On the other hand, access (and recourse) to early retirement, which can be viewed as effectively constituting a means of reducing higher than desired pension saving, has considerably increased.

The factors referred to above, even if they are in fact quantitatively important, cannot directly account for the apparent sharp shift in the trends of the Dutch current account since the early 1980s, as they had been more or less present in previous periods as well. Nonetheless, an empirical investigation of their relevance would be warranted. To the extent that they exert a significant impact on saving behavior, they could suggest that private saving had been biased upward even before the 1980s, although their impact had been overshadowed by the effects of the "Dutch disease." 2/ As these factors would constitute distortions to private saving behavior, there may be room for welfare-improving public policy.

c. Non-distortionary factors affecting private saving

In the remainder of this section, we shall address two additional factors that could be expected to have had an impact on the household and business components of private saving, and which can be expected to have been more prominent in the period since the early 1980s. With regard to household saving, demographic developments can be expected to have exerted

1/ Evidence that the saving aspect of mortgages has also recently increased provides an additional indication that the extent of "over"-saving by households may be rather limited. It should also be noted that use of mortgage lending as a means to finance consumption had also been observed in the mid-1970s.

2/ For a detailed discussion of the principal stylized features of the "Dutch disease," see Kremers (1986).

an important influence during the period under consideration. While the demographic profile of the Netherlands shares many of the features of its major trading partners, there are also a number of important differences. For one thing, the Dutch population is currently younger relative to other European countries. Secondly, while the old age dependency ratio is projected to increase during the first quarter of the next century in the Netherlands as in other European countries, the big jump in the dependency ratio is projected to occur somewhat later, and to be sharper (see tabulation below). 1/

Old-Age Dependency Ratios

(In percent)

	1990	2000	2010	2020	2030
Netherlands	18.6	20.6	23.7	32.8	44.1
Belgium	21.9	24.7	25.0	30.2	38.9
France	20.8	23.6	23.6	30.2	37.5
Germany	21.5	24.1	30.6	33.4	41.5
U. Kingdom	23.7	23.6	24.4	29.2	36.8
EU average	21.2	23.6	26.0	30.3	37.5

Source: United Nations, Long Range World Population Projections, 1992.

Under these conditions, Dutch households can be expected to be willing to save more, so as to attain a smooth intertemporal consumption path. In fact, both the relative timing and relative magnitude of the demographic swings in the Netherlands would appear to constitute a strong reason, perfectly justified on welfare grounds, for a temporarily higher saving rate in the Netherlands than elsewhere.

With regard to business saving, a substantial increase in the share of retained earnings in total business profits is evident since the mid-1980s, pointing to a sharp change in business behavior. This development considerably reinforced the impact of the improved profitability on business saving. As a possible explanation of this trend, it has been suggested that Dutch enterprises, in response to their unfavorable experience related to large-scale reliance on bank credit during the recession of the early 1980s, may have opted for a stronger liquidity position, which led them to reduce the proportion of earnings distributed to shareholders, or invested. 2/

1/ See I.M.F. (1994).

2/ For a detailed discussion, see Bakker (1993).

The impact of both factors mentioned above on private saving non-distortionary, as it results from private decisions of optimizing economic agents. Thus, the impact of demographics on household saving would reflect intertemporal optimization, while a set of circumstances peculiar to the period since the early 1980s could be regarded as giving rise to a precautionary motive for business saving. These factors should not be cause for concern for policymakers, and in fact, policy efforts in this area would probably be welfare-reducing.

4. Sources of low investment

The remainder of this chapter focuses on potential factors that may have kept investment in the Netherlands low during the period since the early 1980s. An obvious question relates to the basis of comparison: low relative to what? It should be emphasized that the relevant comparison is not between the level of investment since the early 1980s relative to its own historical trends. After all, during the period under consideration investment actually rose significantly relative to the immediately preceding years. Rather, the relevant issue for the purposes of the study would be to explore the factors that may have kept investment low relative to saving, thus contributing to a significant increase in the saving surplus that finds its counterpart in the widening of the current account surplus.

The chapter will investigate three sets of factors that would appear to characterize especially the period under consideration. In particular, attention shall be focused on the possible implications of increased capital market integration, of relative factor price movements, and of real sectoral shifts within the Dutch economy.

a. Capital movements

It could be argued that the observed widening of the current account surplus in the Netherlands may have little to do with domestic developments, but may primarily reflect developments in international markets. In particular, the very large increase in the degree of capital market integration worldwide during the 1980s has been well-documented, with the growth of international capital flows far outpacing the growth in the volume of trade in goods and services. It may be argued that capital movements had been fairly liberalized in the Netherlands well before the 1980s, and that therefore any impact of this factor should not have been felt exclusively since the early 1980s. It should be pointed out, however, that some restrictions regarding capital movements (though mostly relating to outflows rather than inflows) persisted well into the 1970s and early 1980s in some of the Netherlands' main partners. Perhaps more importantly, the concept of capital market integration is much wider than the liberalization of the legal framework governing capital movements. It has thus been argued that innovation, both technological and financial, may have contributed at least as much as capital flow liberalization to the observed large increase in international capital mobility.

A large increase in international capital mobility could in principle have a substantial impact on the relative saving-investment trends in a small, open economy like the Netherlands. In particular, given the high saving rate, increased capital mobility would enable Dutch investors to diversify their portfolios by increasing the share of foreign assets in order to maximize expected returns and/or hedge more effectively in the face of uncertainty. This would imply a structurally higher saving surplus, and hence a widening of the current account surplus. 1/ The argument would suggest a causal relationship running from the capital account to the current account and finally, given saving, to the level of investment.

Given that the relationship between saving, investment, and the capital account is an accounting identity, direct empirical investigation of the impact of increased capital market integration internationally on the ratio of investment to saving is not straightforward. However, the underlying theory has certain testable features. Thus, among others, Feldstein and Horioka (1980) suggest that perfect capital mobility should have strong implications for the correlation between saving and investment. In their model, while perfect capital mobility could imply a structural change in the saving surplus, it would also imply zero correlation between domestic saving and domestic investment. While it has been demonstrated that this extreme result depends crucially on a number of rather strong assumptions of the Feldstein-Horioka model, 2/ it would be reasonable to postulate that, to the extent that the degree of capital market integration has an impact on saving and investment decisions, increased capital mobility should imply reduced correlation between domestic saving and domestic investment and, more generally, that domestic saving should be a poorer predictor of domestic investment.

This intuition is exploited below by breaking the available sample in 1981, when persistent current account surpluses started to emerge, and running separate regressions of the ratio of domestic investment to GDP (INV) on the ratio of domestic saving to GDP (SAV) over the two sub-samples. The estimation results were as follows (t-statistics in parenthesis):

Sample: 1970-1981

$$\text{INV} = 6.648 + 0.676 \text{ SAV}$$

(1.5) (3.7)

$$R^2 = 0.54 \quad \text{SE} = 1.857 \quad F(1,10) = 13.7 \quad \text{DW} = 1.6$$

1/ A positive response of total saving to increased capital mobility, presumably reflecting a higher rate of return would strengthen this effect. However, empirical evidence for a number of countries has tended to suggest that the interest elasticity of saving is rather low.

2/ See, for example, Obstfeld (1986), Bayoumi (1990), and Barro, Mankiw and Sala-i-Martin (1995).

Sample: 1982-1992

$$\text{INV} = 4.039 + 0.681 \text{ SAV}$$

(1.6) (6.3)

$$R^2 = 0.81 \quad \text{SE} = 0.486 \quad F(1,9) = 39.0 \quad \text{DW} = 1.4$$

The estimation results suggest that increased capital mobility over time is not likely to have played a major role in explaining the observed trends of investment relative to saving in the Netherlands since the early 1980s. For one thing, the estimated coefficient of the saving rate is virtually identical across the two sub-samples. Even more striking are the conclusions regarding the predictive power of the saving rate with respect to the investment rate. Based on the (adjusted) R^2 , standard error, and F-statistic, it is clear that the equation fit in fact substantially improves during the later period, implying that the domestic saving rate has been a better predictor of the domestic investment rate when capital was presumably more mobile. In particular, while the variation of the saving rate explains only about half of the variation during the 1970s and early 1980s, its predictive power increases to over 80 percent in the period since the early 1980s.

The importance of this result should not be exaggerated, however. What the estimation results suggest is simply that outward investment opportunities in the case of the Netherlands were not significantly affected by international developments towards closer capital market integration in the more recent period. Thus, the results should be interpreted as indicating that the trends of the ratio of domestic investment to domestic saving, and hence of the current account, during the period under consideration cannot be accounted for to any substantial extent by increased capital mobility, or at least that the impact of this factor has been dominated by more important developments.

b. Wage moderation

One of the salient features of the Dutch economy since the early 1980s has been a marked shift in wage trends relative to the preceding period. 1/ In particular, since the early 1980s nominal (and real) wages rose much more moderately, both relative to other industrial countries and relative to the trends of the preceding decade. Indicative of the magnitude of this shift is the evolution of labor's share in total income, which declined from a peak of over 95 percent in the beginning of the 1980s to 80 percent by the end of the decade, before edging up again at the beginning of the 1990s to reach 84 percent by 1994.

Given the Netherlands' status as a small, open economy, it would be reasonable to postulate that the price of capital is entirely determined

1/ A detailed discussion of wage developments since the early 1980s is provided in Chapter I.

exogenously from abroad. As the credibility of the Dutch monetary policy attained during the period under consideration enabled the Netherlands to avoid the substantial fluctuations in interest rates that characterized other EMS countries, the real price of capital during this period can be expected to have experienced much greater stability relative to the trends of the real price of labor. Accordingly, the period since the early 1980s likely witnessed a major change in factor prices, with the price of labor rising much more moderately relative to the price of capital. 1/ In turn, these trends in relative factor prices can be expected to have had an important impact on factor proportions, with individual firms switching to more labor-intensive techniques or, at the level of the economy as a whole, with production shifting to more labor-intensive sectors since the early 1980s. This pattern of factor substitution would suggest a potentially important link between wages and the degree of capital accumulation in the Netherlands.

Once again, it should be stressed that what is at issue is not whether a decrease in the relative price of labor would lead to a reduction in investment in absolute terms (or as a share of GDP). In fact, it has been well established that the recovery of investment since the early 1980s mainly reflects improved business profitability. Rather, what is relevant for the purposes of this chapter is whether in fact lower wages can be expected to result in a reduction in investment relative to saving. The argument will be that, while lower wages would tend to encourage both higher (business) saving 2/ and higher investment, the impact on the investment side is partly offset by a pattern of substitution away from capital toward labor; the reverse would be expected to hold in periods of higher relative price of labor. The quantitative importance of this factor would thus appear to hinge crucially on the strength of these patterns of factor substitution.

A problem in investigating the issue of factor proportions directly relates to the non-existence of capital stock data for the Netherlands. However, there are indirect indications that the effects involved could be substantial. This can be seen from the relative trends in employment and production between the early 1970s and the early 1990s. Thus, the OECD (1994) estimates that between 1970 and 1985 employment in the sheltered sector stagnated, while production increased by 45 percent in real terms. During approximately the same period, developments in the exposed sector were even more extreme, with a similar production growth of around

1/ At this stage of the argument, it is not very important to determine the sources of the change in relative factor prices. In particular, the relevant linkages would be virtually identical whether the factor price changes can be best characterized as exogenous, or whether they themselves have been caused by underlying factor supply developments. This point will be addressed briefly below.

2/ The impact on total private saving would be higher to the extent that, in the short-run, low wage growth lowers the household consumption to GDP ratio, thus increasing the household saving rate as well.

45 percent accompanied by a decline in employment of the order of over 20 percent between 1970 and 1984. These trends are estimated to have been sharply reversed in the ensuing period. Thus, between 1985 and 1992, a production growth of around 20 percent in the sheltered sector was accompanied by a 20 percent increase in employment; similarly, the (more capital-intensive) exposed sector experienced a 25 percent production growth and a 7 percent employment growth. 1/ Such sharp swings in labor productivity would provide strong prima facie evidence that changes in factor proportions have in fact been substantial between the early 1970s and the early 1990s.

As a starting point in the empirical investigation of the impact of relative factor prices, a simple equation linking a real wage variable to the investment-saving ratio is postulated. Given the assumption of near-constancy of the price of capital (at least compared to the price of labor) the real wage will serve as a proxy of relative factor prices. The wage variable chosen was a real compensation per employee index (RW), as the most representative of the entire economy, 2/ normalized around 100 so as to be of the same order of magnitude as the investment-saving ratio.

A specification imposing instantaneous adjustment would be unrealistic, given that the underlying adjustment process involves switches in production techniques which can be expected to be costly and take time. Accordingly, a standard partial adjustment process was postulated, according to which an equation of the form

$$(INV/SAV)^* = a_0 + a_1 RW, \quad (1)$$

is regarded as a long-run relationship, whereas the actual investment-saving ratio only partially adjusts to deviations from its long-run desired level, according to the equation:

$$(INV/SAV)_t - (INV/SAV)_{t-1} = k [(INV/SAV)_t^* - (INV/SAV)_{t-1}], \quad 0 < k < 1 \quad (2).$$

This specification introduces some rudimentary dynamics into the model, and has the advantage of distinguishing between the short-run and long-run coefficient of RW. Straightforward manipulation of equations (1) and (2) yields the final equation to be estimated:

$$(INV/SAV)_t = c_0 + c_1 RW + c_2 (INV/SAV)_{t-1}, \quad (3)$$

where $c_0 = ka_0$
 $c_1 = ka_1$
 $c_2 = 1-k$

1/ The employment figures are expressed in terms of full-time equivalents; the increase in the number of persons employed was substantially higher.

2/ Estimations using the real hourly wage in manufacturing as the wage variable produced essentially identical results.

As can be easily verified, all of the structural parameters of the model are identified.

Using the actual level of the real wage as explanatory variable would not adequately capture the impact of relative factor prices, however. The main problem stems from the fact that RW is non-stationary. Thus, the time-path of RW (almost steadily increasing, but at a much slower pace since the mid-1980s) and the time path of the INV/SAV variable (exhibiting a structural jump since the early 1980s but otherwise displaying moderate fluctuations), suggest that the two variables are not co-integrated. In this context, the high R^2 could be regarded as mainly capturing the sub-period up to the early 1970s, when the variability of RW was much higher. In fact, a Chow test rejects the stability of the specification employing RW as explanatory variable over different sub-periods.

In order to test for robustness of the impact of relative factor prices on the investment-saving ratio, two variants of the RW variable that are not subject to the co-integration problem referred to above were used as explanatory variables: a de-trended real wage, and the rate of change of the real wage (rather than its level). ^{1/} With regard to the first variant, the explanatory variable (RWDEV) is defined as the deviation of the real wage from its Hodrick-Prescott trend. The estimation results of the instantaneous adjustment and the partial-adjustment specifications using RWDEV as explanatory variable are presented below:

$$\begin{aligned} (\text{INV/SAV}) &= 78.818 + 12.038 \text{ RWDEV} \\ &\quad (16.3) \quad (4.4) \end{aligned}$$

$$R^2 = 0.48 \quad \text{SE} = 23.243 \quad F(1,21) = 19.2 \quad \text{DW} = 1.2$$

$$\begin{aligned} (\text{INV/SAV}) &= 38.013 + 5.420 \text{ RWDEV} + 0.556 (\text{INV/SAV})_{-1} \\ &\quad (4.3) \quad (2.7) \quad (5.1) \end{aligned}$$

$$R^2 = 0.75 \quad \text{SE} = 14.351 \quad F(2,19) = 28.0 \quad \text{DW} = 2.2$$

For the case of the rate of change of the real wage (DRW) as explanatory variable, the estimation results were as follows (for brevity, only the partial adjustment specification is presented):

$$\begin{aligned} (\text{INV/SAV}) &= 2.943 + 4.532 \text{ DRW} + 0.613 (\text{INV/SAV})_{-1} \\ &\quad (0.2) \quad (2.3) \quad (6.5) \end{aligned}$$

$$R^2 = 0.73 \quad \text{SE} = 18.482 \quad F(2,19) = 25.6 \quad \text{DW} = 2.3$$

The estimation results using the de-trended real wage and the rate of change of the real wage as explanatory variables lend considerable support

^{1/} For both variables, a Chow test failed to reject stability across sub-samples.

to the conclusion that relative factor prices explain a substantial part of the variation in the saving-investment ratio. For both variables, the R^2 was high, around 75 percent in the partial adjustment specification. At the same time, the estimated adjustment coefficients, measuring the extent of instantaneous adjustment of the investment-saving ratio, at 44 percent in the de-trended real wage equation and at 39 percent in the real wage growth equation, do not appear particularly large in view of the likely cost of switching to an alternative production technique.

The results of the estimations performed above suggest that the impact of relative factor prices on the investment-saving ratio is strong. ^{1/} For instance, between 1970-81 and 1982-92 investment as a percent of saving fell on average by 10.3 percentage points, from 95.9 percent to 85.7 percent. The fall in the de-trended real wage and in the real wage growth variables during this period account for the bulk of this decline, estimated at 9.7 and 9.4 percentage points respectively. It should be cautioned that these figures probably overestimate the true contribution of the wage variables as other relevant explanatory variables have not been considered. They suggest, all the same, that factor prices are an important determinant of the saving-investment ratio.

The increase in the current account related to these factor price developments should not be cause for policy concern, whatever the origin of the factor price changes. To the extent that the dominant underlying reason relates to relative factor supply developments, notably an expansion of labor supply associated with an increase in female labor force participation during the period under consideration, a fall in the price of labor relative to the price of capital should be viewed as part of the transmission mechanism towards a new, welfare-improving equilibrium. Even if, however, one views the moderation of wage trends since the early 1980s as mainly reflecting a policy of wage restraint, it would be difficult to view these policies as distortionary. In fact, to the extent that this view of wage developments is accurate, the wage moderation policies probably contributed to easing excess supply conditions in the labor market, thus reducing already existing distortions.

^{1/} In order to further test the robustness of the postulated effect, the labor income share in total value added was also considered as a potential explanatory variable. While this variable is in some ways a less reliable indicator of relative factor prices since it compounds changes in factor prices and changes in factor proportions, it should capture any bias caused by the assumption that the real price of capital has fluctuated much more moderately than the price of labor over the estimation period. The estimation results, while entailing lower explanatory power and lower significance levels were entirely consistent with the results presented above, suggesting that any mis-specification with regard to the relative factor price variable is not likely to be important.

c. Real sectoral shifts

Shifts between the various sectors of the Dutch economy may also have had an impact on the level of investment relative to saving during the period under consideration. The importance of such sectoral shifts is reflected in the long-term trends in relative prices. In particular, the Netherlands has experienced a trend rise in the relative price of nontradable relative to tradable goods during the last two decades, an experience very much shared by most other industrial countries. Thus between 1981 and 1993 the overall increase in the price of nontradable goods was 37 percent; during the same period, the increase in the price of tradables was only 13 percent. The effect is so big that, in recent years, many countries have found that nontradables inflation accounts for almost the total inflation.

For the purposes of this chapter, determining the origin of these relative price changes is crucial. In particular, the impact on the investment-saving ratio would likely be quite different depending on whether supply side or demand side shocks have been at the source of the observed relative price trends. A supply-side modelling of relative price changes has a long tradition, going back to Harrod (1938) and formalized by Samuelson (1964) and Balassa (1964). The theory rests on the assumption, which has received wide empirical support, of faster productivity growth in the tradable goods sector relative to the nontradable goods sector, and predicts a rise in the relative share of tradables along with a fall in their relative price over time. If such supply side factors have been the principal cause of the observed relative price changes, then sectoral considerations would be of little usefulness in accounting for the trends in the investment-saving ratio in the Netherlands during the period under consideration. Indeed, the dominance of supply side factors would likely imply an increase in the investment-saving ratio, given that the tradable goods sector (principally manufacturing) is much more capital intensive relative to the non-tradable goods sector (typically services). 1/ This would of course be the reverse of the trend observed in the Netherlands since the early 1980s.

However, recent evidence indicates that in a number of countries, including the Netherlands, an increase in the relative price of nontradables has been accompanied by a rise in their relative share in the economy's total value added. 2/ Thus, the share of nontradable goods in total value added rose steadily from 65 1/2 percent in 1970, to 71 percent in 1980, and to 75 1/2 percent in 1993. This would suggest that a demand shift towards nontradables could be at least as important a part of the relative price trends described above. Two broad types of explanations for such a relative

1/ Strictly speaking, this is not entirely correct. The solution would depend on what form technical progress takes, i.e., whether it is "labor-saving" or "capital-saving."

2/ See, for example, De Gregorio, Giovannini and Krueger (1993), Micossi and Milesi-Ferretti (1994), and De Gregorio, Giovannini and Wolf (1994).

demand shift towards nontradable goods have been suggested in the literature. The first relates to consumer tastes, and in particular is based on the hypothesis that the income elasticity of demand is higher for services than for manufactured goods. This hypothesis has received a fair amount of empirical support from both aggregate time series and household consumption cross section analysis, and suggests that the relative demand for nontradables should be expected to increase in line with the rise in per capita income. The second, and probably more important, explanation relates to the trend rise in the share of the public sector in the total economy over time, in the sense that government expenditure directly produces a range of nontradable commodities, ranging from public safety to health care. 1/

To the extent that such a relative demand shift away from tradables and towards nontradable goods has been an important feature of the Dutch experience during the period under consideration, it may be expected to have had a significant impact on the investment-saving ratio, and hence the current account. The impact of the relative demand shift may be viewed as working via two distinct channels. The first, more direct, channel once again concerns factor proportions. As services production is significantly less capital intensive than goods production, 2/ a demand shift towards nontradable goods can be expected to have a negative impact on capital accumulation.

The second link between relative sector demand and the investment-saving ratio is somewhat more subtle (and much more difficult to test empirically). While the tradable goods sector, being exposed to international competition, is usually treated as conforming to the perfect competition (or at least, to the extent that economies of scale are important, to the monopolistic competition) paradigm, it could be argued that the nontradable goods sector is less than perfectly competitive. In fact, the non-competitive aspects of the sheltered sector have received wide attention in the Netherlands, in view of the predominance of cartel arrangements, barriers to entry, complex licensing requirements, and a host of other distorting factors. The presence of these distortions could act as a strong impediment on investment in this sector in the event of a relative demand shift towards nontradables, thus biasing the overall investment-saving ratio downwards, and the current account surplus correspondingly

1/ This effect is only partially offset by the reduction in the relative demand for nontradables (given their higher income elasticity) deriving from the reduction in household disposable income resulting from the government's increased financing needs.

2/ In fact, the CPB's medium-term macroeconometric model FKSEC imposes the assumption that in the sheltered sector labor constitutes the only factor of production.

upwards. 1/ In the presence of these distortionary factors, structural policies aiming at increasing product market competition could have an important impact on the current account.

The quantitative importance of real sectoral shifts for the issues in question is tested empirically on the basis of an underlying model developed in De Gregorio, Giovannini and Wolf (1994). The model postulates constant returns to scale, Cobb-Douglas production functions for tradable and nontradable goods, while allowing for differences with regard to factor shares and total factor productivity growth between the two sectors. In addition, the law of one price is assumed to hold in the traded goods sector and the price of capital is assumed to be exogenously given to domestic producers by the international capital market. Under perfect competition, the change in the relative price of nontradables relative to tradables (P) can be readily shown to be completely supply-determined, and to depend only on the difference in total factor productivity growth, weighted by the relative factor shares in the two sectors, in line with the Samuelson-Balassa hypothesis: 2/

$$D(P) = (a_N/a_T)D(G_T) - D(G_N) , \quad (4)$$

where a_N and a_T stand for, respectively, the labor share in the nontradable and tradable goods sector, and g_N and g_T for total factor productivity in the nontradable and tradable goods sector, while D denotes the rate of change.

Relaxing the assumption of perfect competition for at least one of the two sectors would allow demand factors to have a role in the determination of relative prices. The model derives a higher income elasticity of private consumption of the nontradable good by introducing a (positive) subsistence level of consumption of the tradable good; with regard to government consumption, it assumes that it falls entirely on the nontradable good. Combining the demand and supply features described above, De Gregorio, Giovannini and Wolf estimate the following reduced-form equation:

$$P = a_0 + a_1g + a_2gov + a_3y + a_4D(infl) , \quad (5)$$

where g stands for relative factor productivity in the two sectors (weighted by the ratio of the labor shares), gov is government expenditure over GDP (both in real terms), y is per capita income, and D(infl) is the first difference of the rate of inflation. This latter term is included to capture the impact of sluggish price adjustment in the nontradable goods

1/ It could be argued that the effect on the investment-saving ratio would be reinforced by a distortion on the saving side. To the extent that monopoly rents are important in the sheltered sector, a relative demand shift toward nontradables could bias overall business profitability, and hence business saving upward.

2/ Obviously, the relative output of the two sectors will depend on both supply and demand conditions.

sector. The equation was estimated via a panel method, combining time series and cross section observations for a number of OECD countries. The authors found that demand-side factors, in addition to supply-side factors, are an important determinant of relative prices. Over the longer-term, however, the importance of demand-side factors in explaining relative prices is considerably reduced, and supply-side factors become dominant, as should be expected.

For the purposes of this chapter, the main direction of influence that is of interest is not the impact of relative demand and supply factors on the tradable goods/nontradable goods relative price. Rather, the direction of influence relevant for our purposes concerns the impact of the above factors on the composition of output, which is already implicit in the findings of De Gregorio, Giovannini and Wolf (1994), as this is postulated to affect the investment-saving ratio. 1/ Accordingly, a variant of equation (5) was estimated, employing the investment-saving ratio as the dependent variable. *We begin by examining the extent to which supply factors and relative demand shifts alone, to the exclusion of other relevant explanatory variables, can account for variations in the (INV/SAV) variable.* In the second stage of the investigation, the joint impact of these factors with that of the real wage variables discussed above will be examined, in order to obtain a fuller picture of the main determinants of the variable in question, as well as of their relative importance.

A practical problem concerns the actual definition of the two sectors for the purposes of econometric analysis, as in reality goods and services cannot be grouped into tradables and nontradables as neatly as theory would have it. For the purposes of this study, two alternative breakdowns were considered as the operational definition of the two sectors: the traditional one between goods and services, and one which groups transportation with the tradable goods category, in line with the De Gregorio, Giovannini and Wolfe (1994) methodology. 2/ As the estimation results under the two definitions were virtually identical, the results presented below relate to the goods/services breakdown.

The equation to be estimated includes (INV/SAV) as the dependent variable, and relative productivity in the two sectors, weighted by the

1/ It should be pointed out that the authors' finding that the impact of a (permanent) demand shift towards nontradable goods on relative prices is lower in the long-run would imply that their impact on relative quantities should be higher in the long-run. The underlying mechanism is one in which entry of new firms into the sheltered sector over the long-run tends to return relative prices to their initial level, while resulting in further increases in the relative output of the sheltered sector.

2/ The authors based the distinction on the actual degree of tradability (defined as the share of value added that is exported) of different categories of goods and services. They found that, while all categories of goods qualified as tradables, all service categories, with the exception of transportation, qualified as nontradables.

average respective labor shares (PROD), general government current expenditure as a percent of GDP (GOV), and real GDP per capita (GDPPC) as explanatory variables. 1/ A number of shortcomings should be mentioned. A first problem relates to the sample size: CBS real value-added data on a sectoral basis go back only to 1977, thus reducing the sample size by almost one third relative to the equations estimated above. A more fundamental problem concerns the definition of the relative productivity variable. As capital stock figures are not available for the Netherlands, total factor productivity could not be computed. Instead, labor productivity growth in each of the two sectors was used as a proxy for total factor productivity.

The estimation results are as follows (t-statistics in parenthesis):

$$(INV/SAV) = 319.2 + 0.512 \text{ PROD} - 3.492 \text{ GOV} - 1.383 \text{ GDPPC}$$

(5.4) (1.2) (3.9) (2.2)

$$R^2 = 0.69 \qquad SE = 5.594 \qquad F(3,11) = 7.6 \qquad DW = 1.8$$

The results suggest that relative demand shifts have been an important determinant of the investment-saving ratio during the period under consideration. With regard to the demand-side variables, both government expenditure and per capita GDP are statistically significant and correctly signed. On the other hand, the coefficient of the PROD variable, while correctly signed, turned out to be statistically insignificant. While this could be a reflection of the fact that labor productivity is not a perfect proxy for total factor productivity, it may also suggest that technical change in the Netherlands in recent years may have been of a predominantly capital saving nature. 2/ However, to the extent that the insignificance of the PROD coefficient is related to the use of labor productivity growth as an (imperfect) proxy for total factor productivity growth, this could raise some doubt over the interpretation of per capita GDP as a predominantly demand-side variable.

While the results presented above establish the importance of relative demand shifts in explaining the investment-saving ratio, it is very difficult to test directly to what extent this effect operates via the impact on factor proportions, rather than reflecting the presence of distortions in the nontradable goods sector. However, the implications of the underlying model suggest a simple test that could lead to a useful international comparison. It should be recalled that the benchmark case of perfect competition suggests that in the long run relative prices should be independent of demand-side factors, on the assumptions of a constant returns to scale technology in the nontradable goods sector, an exogenously determined price of capital, and price-taking behavior in the tradable goods

1/ The inflation variable turned out to be insignificant under all specifications, and was consequently dropped.

2/ To the extent that capital-saving technical progress is embodied in the more recent vintages, this could be a partial explanation of the higher rate of capital depreciation since the late 1970s.

sector. In that sense, the extent of the actual increase in the relative price of nontradables could proxy the extent of the deviation from perfect competition in the sheltered sector. De Gregorio, Giovannini and Wolf (1994) plot a best-equation fit of the relation between relative total factor productivity growth and the average annual rate of increase in relative prices. On the assumption of comparable relative demand shifts between industrial countries, it can be calculated that the average annual growth of the nontradables/tradables relative price in the Netherlands was three quarters of a percent higher than would be predicted on the basis of the industrial countries sample. This would suggest that the extent of distortions in the Netherlands' sheltered sector may be significantly higher relative to its main trading partners.

We now proceed to incorporate the wage variables discussed above in order to estimate the joint importance of wage moderation and relative demand shifts in explaining the trends of the investment-saving ratio, and hence the current account. The estimation results, using the detrended real wage (RWDEV) as the wage variable 1/ are as follows (t-statistics in parenthesis):

$$(INV/SAV) = 180.5 + 3.617 RWDEV + 0.794 PROD - 1.373 GOV - 1.016 GDPPC$$

(4.1) (4.7) (1.4) (2.5) (2.6)

$$R^2 = 0.91 \qquad SE = 3.234 \qquad F(4,10) = 20.7 \qquad DW = 2.1$$

The estimation results suggest that wage developments and real sectoral shifts both constitute important determinants of the investment-saving ratio during the period under consideration, with the explanatory variables accounting for over 90 percent of the variation of (INV/SAV). In addition, the equation fit, in terms of R^2 , standard error and F-statistic, significantly improves under joint estimation. While the estimated magnitude of the impact of both sets of variables is now lower than under separate estimation, as should be expected, the coefficients of all variables remain correctly signed and statistically significant (again, with the exception of the PROD variable). In terms of explanatory power, of the 10.3 percentage point decline in the investment-saving ratio during the period under consideration, the wage variable accounts for 3.1 percentage points, government expenditure for 7.3 percentage points, and per capita GDP for 2.6 percentage points. 2/

In contrast to the impact of wage developments, it could be argued that the impact of relative demand shifts on the investment-saving ratio may well entail distortionary features that call for welfare-improving policy

1/ The use of real wage growth as the relevant wage variable resulted in somewhat lower significance levels (especially with regard to the coefficient of DRW itself), but otherwise yielded virtually identical results.

2/ The relative productivity variable would predict a 1.8 percentage point reduction in the investment-saving ratio.

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