DUISENBERG LECTURE 2

Paying for Social Security in the Long and the Short Run

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1. Background

It is common for parents to tell their children how much better off they are than their own grandparents were, and there is a good reason for that: advanced economies have reached standards of living impossible to imagine in decades or centuries past. In 2008, the average person in the Netherlands produced roughly EUR 36,250 worth of final goods and services – what economists call gross domestic product or GDP.[1] According to data collected by the economic historian Angus Maddison, GDP per capita is roughly seven times greater than it was in 1900. Table 1 presents the same data for Germany and the United States, and shows that all three nations enjoy comparable degrees of economic development. In my lecture today I would like to talk about how the Netherlands, Germany and the United States have used this massive increase in prosperity to insure its weakest citizens against the vagaries of illness, unemployment, disability and old age – but also how doing so may actually put some of these gains in well-being at risk.

Workers are a necessary element for the growth success story, and Dutch workers have also participated in economic growth – real wages increased by as much if

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* I am very grateful to Johan Heilbron and Philip de Jong for useful discussions and to Mark Walschot for competent and enthusiastic research assistance.

1 Source: OECD (http://stats.oecd.org/index.aspx). All calculations are available from the author upon request.

Table 1. Productivity, Compensation and Income Distribution in the Netherlands, Germany and the United States of America, 2008

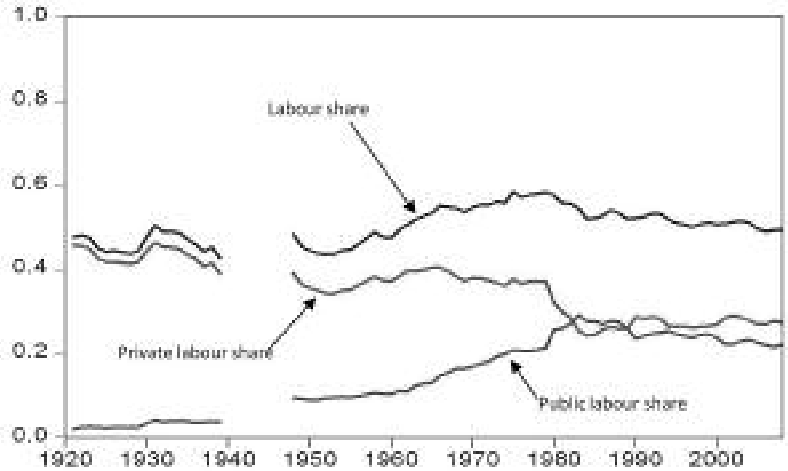
	(1) *GDP/capita (Euros)*	(2) *Compensation/ employee (Euros)*	(3) *Ratio (2):(1)*	(4) *Labour share in GDP*	(5) *Private labour share in GDP*
Netherlands	36,246	39,161	1.08	0.495	0.274
Germany	30,392	34,206	1.13	0.490	0.327
United States of America*	32,099	39,780	1.24	0.560	0.491

Source: OECD. *Converted from US dollars using average exchange rate in 2008 of $1.47/EUR

not by slightly more than GDP per capita over the past century. In 2008, an average employee earned about €39,200, about 1.08 times GDP per capita in the same year. In Germany, the average employee in 2008 earned about €34,200, or about 1.13 times GDP per capita. From this fact, we see not only that the Netherlands is a wealthy nation, but it has been able to spread its employment needed to generate that output over more people than Germany has. This is even more striking when one considers that in 1983, a year when unemployment in the Netherlands exceeded 14%, the ratio of compensation per employee to GDP per capita was as high as 1.6. The decline from 1.6 to 1.08 over the past three decades is the clearest expression of the so-called Polder model that I can imagine. If the Germans could achieve a Dutch ratio of compensation per worker to GDP per capita, while holding their current labour share constant, they could increase their employment-population ratio by about 4.3 percentage points.

As employment relationships in advanced economies become increasingly precarious, the terms “employment”, “earn” and “compensation” blur. From Table 1 we see that the employer of an average worker in the Netherlands in 2008 paid, all told, €39,161 for the services of that worker over the year. Multiply this by the number of employees and divide by GDP, and we obtain the share of national output which is paid to or on behalf of employed workers, either as direct pay,

Figure 1. Share of GDP paid to labour in the Netherlands, 1921-2008



Source: Central Statistical Bureau. The labour share is defined as total compensation including social security contributions as a fraction of GDP. The private labour share is the ratio of total wages and compensation less social security contributions to GDP. The public labour share is the difference between the labour share and the private labour share.

fringe benefits or as contributions to social insurance. This is the so-called "labour share" and was about 50% in the Netherlands in 2008.[2] Naturally, workers do not receive all of the fruits of their labour; of that total annual compensation of € 36,246, a sizable portion, € 8,463 was paid directly by the employer to the government as contributions to social insurance, and, according to the Central Statistical Bureau, another € 9,040 was paid by workers – resulting in total social contributions of € 17,503. The OECD, after some elaborate netting adjustments, arrives at a somewhat more modest figure of € 11,979. The remainder which workers receive can be divided by GDP to arrive at a "private labour share" - about 27.5% of GDP in 2008. It represents the fraction of total output which ultimately lands in the private hands of workers (before income taxes, of course).

2 These calculations are based on national data sources. According to the OECD, the labour share was somewhat higher in 2008.

Here we see another telling hallmark of the Polder model – a smaller share of the income cake available for private use. The Netherlands and Germany are much more similar to each other than to the United States of America, where workers receive a much larger private piece of the cake – at the cost of a sharply reduced government involvement in health care, pensions, unemployment benefits, and the provision of other public services. Unlike the European countries, the ratio of compensation per employee to GDP per capita in the United States of America has increased since 1983 from 1.20 to 1.24.

Returning to the Netherlands, Figure 1 shows the historical evolution of the total labour share, the private labour share and the public labour share since 1921. Three important phases can be identified. In the first phase, the postwar decades of the 1950s and 1960s, strong economic growth set the stage for an expansion of social security and the welfare state. The second period is the stagflation of the 1970s, when oil price increases and loss of competitiveness (the Dutch disease) led to a sharp increase in payroll taxation to finance ever-rising unemployment (Bruno and Sachs 1985). Third, the post-1983 period, associated with a sharp rollback in the role of the state, is evidenced by sharp declines in the public labour share and payroll taxation. In what follows, I would like to explain why the rather sharp U-turn in the role of the state in the labour share despite relative stability of the latter is a vitally important piece of information for economists.

2. Prosperity, social security and the role of labour in the long run

Sustained increases in productivity and income over the past 150 years have brought great gains in health, security and material well-being to citizens of modern advanced economies. It is only natural to expect societies to seek ways to protect those gains, not only from economic crises but also from envy and greed from within. Social security can be interpreted either as the expression of demand for more equality or, cynically, the protection of “the haves” from threats of populism, social unrest and revolution. A liberal, free market view approach would keep markets competitive and barriers to entry low, allowing more participation in the dynamism that lies behind economic growth. A second, collectivist approach offers varying degrees of social insurance against the drastic deterioration of economic and social status associated with illness, unemployment, disability or retirement. The concepts *sociale zekerheid, Sozialversicherung*, and *social insurance* may be expressed differently across space and time. But their meaning is universal: assumption by the government of certain risks which are difficult or impossible for markets to insure against.

These are hardly new insights. In the late 19th century, German chancellor Bismarck promoted social legislation to deflect growing unrest in the working classes and to defuse a burgeoning social democratic movement. Systems of health, accident and disability, and old age insurance were designed to lift up the lowest of all boats. Historians generally characterise the first German social reforms as penurious, promising real insurance only in the worst possible states – for example, pensions at the age of 70 at maximally 40% of last income. As an insurance scheme, the system was well-insulated from public redistribution by the so-called equivalence principle (*Äquivalenzprinzip*) that one is only entitled to an actually fair constellation of social benefits. The German system served as a model not only for the Dutch social insurance system reforms in the early decades of the 20th century, but also for the Social Security Act of 1935 in the United States and in the rest of the developed world. After World War II, Lloyd Beveridge's alternative model of social security emerged not only in the UK, but also in Scandinavia, Continental Europe and even in the United States of America, which made redistribution explicit via absolute minimum levels of pensions, unemployment insurance, health care, disability insurance and other benefits and funding these from general (and generally progressive) taxation.[3]

Social insurance is expensive. In 2008, the Netherlands distributed € 98.6 billion, or about 16.5% of its GDP in social benefits. Funding these cash payouts requires reliable income sources. Both Bismarckian and Beveridgean systems are funded primarily from the fruits of labour, labelled euphemistically by the Organization for Economic Cooperation and Development (OECD) as "social contributions." Economists in most countries call these contributions payroll taxes, as does the OECD. Whether paid by employer or employee on paper, they represent money that the firm pays to employ a worker, but the worker does not receive. In competitive markets, it doesn't matter whether the employer or the employee pays the contribution, because the incidence of the tax depends on the elasticities

[3] Even in the motherland of Bismarckian systems, Germany, it was increasingly acknowledged that the lowest boats in the harbour needed lifting above and beyond what could be expected from an actuarially fair insurance system. Since 2003 the German *Sozialgesetzbuch* explicitly merges both insurance and basic benefits systems.

Table 2. Social contributions (payroll taxes) as % of total worker compensation

	1970-1989	1990-2008	2009*
Netherlands	29	29	27
Germany	28	34	32
United States of America	10	12	12

Source: OECD. Data for the Netherlands are lower than national figures due to netting. *Estimates

of labour supply and demand.[4] Probably for cosmetic reasons, social contributions by employer and employee are set to be equal in most countries, even though incidence generally falls on the labour supply (by households), which in the longer run tends to be inelastic, and less so on labour demand (by firms) which tends to be as highly elastic as is the supply of capital which is complementary for production. Since Frank Ramsey's influential work in the 1920s, it is an established principle that taxes on goods and services with low elasticities of supply and demand should be high. Because the supply of labour by households is considered relatively inelastic, it is natural for governments to finance an ever-expanding welfare state with ever-growing payroll taxation on labour. This was indeed the case in the Netherlands until about 15 years ago.

Payroll taxation is a significant source of revenue for the wealthy economies of the world. According to the OECD, they amounted in 2005 to $3 trillion, or about 9.2% of OECD GDP. Table 2 displays social contributions for the Netherlands, Germany and the United States since 1970, as a fraction of all wages and compensation paid to workers, including those social contributions. These data are standardised by the OECD and are lower than those reported by national authorities.

[4] This was certainly the view of the great public finance economist Arthur Cecil Pigou, who wrote: "The two [...] policies, as already been hinted, are identical in principle and would be identical in form if the contributions of employers and employed, instead of being called contributions and paid into the insurance fund, were called taxes and paid into the revenue account." (Pigou 1956: 244).

With few exceptions, payroll taxes are high in Europe. In the period 1990-2008, contributions were about 41% of total labour compensation in France, 26% in the UK and 32% in Sweden. While contributions appear stable in the Netherlands, Table 2 does not adequately convey movement taking place beneath the pond's surface. Table 3 presents a more detailed evolution of the financing of Dutch social security over time and by funding source. Three historical phases of the modern Dutch welfare state can be read from this table: 1) the massive postwar expansion of social security and the welfare state, which was financed largely by employers contributions until the early 1970s; 2) the sharp rise in contributions by employees coupled with more moderate increases in employer contributions in the 1970s; and 3) since the early 1980s, a dramatic pull-back of employer contributions and increasing "privatisation" of insurance previously provided by the state (pension, sick-pay).

Table 3. The longer run: The rise and decline of social payments and social contributions in the Netherlands, 1921-2009 (% of GDP)

	1928	1938	1948	1958	1968**	1978	1988	1998	2008
Total social payments	*1.9*	3.2	9.3	12.2	18.3	19.3	22.7	18.7	16.5
Employers contributions	1.6	2.3	5.9	6.7	10.3	12.9	11.7	9.9	10.7
Employee Contributions	*0.9.*	*1.4.*	*3.5*	*4.0*	6.0	7.9	15.7	14.6	11.4
Total gross social contributions	*2.5*	*2.7*	*9.4*	*10.7*	16.4	20.9	27.4	24.5	22.1
of which: Health, sickness benefits	*n.a.*	*n.a.*	*n.a.*	*n.a.*	3.9	5.6	6.4	5.4.	7.6
Pensions	*n.a.*	*n.a.*	*n.a.*	*n.a.*	7.4	8.5	15.2	14.6	12.1
Unemployment		*n.a.*	*n.a.*	*n.a.*	1.7	2.8	2.8	4.1	3.1
Disability benefits						1.0	2.6	0.2	0.1
Total net social contributions (OECD/ Eurostat estimates)	*n.a.*	*n.a.*	*n.a.*	*n.a.*	20.5	25.9	27.4	24.4	22.1

Source: Central Statistical Bureau, OECD. Italics denote estimated or interpolated values. *value in 1969. **including contributions of self-employed. *n.a.*=not available

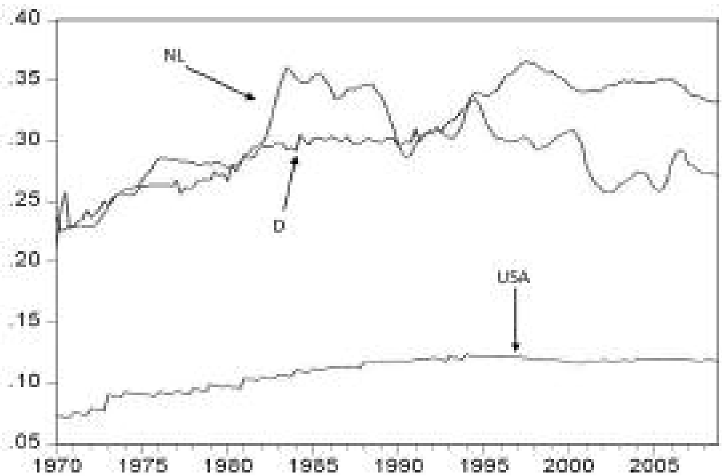
Contrast the turbulence of the components of social insurance and the levels of payroll taxation with the stability of the total wage share paid to labour. This basic fact is consistent with only a subset of economic theories, and these only in the long run.[5] Yet in the longer run however they suggest, as consistent with findings of Gruber (1997) and others, the incidence of payroll taxes falls completely on labour. Following Gruber (1997), complete shifting of taxes on labour will occur if: 1) the labour supply is inelastic; 2) the demand for labour is highly elastic; or 3) workers see themselves as receiving “full value” for payroll taxes paid. In a long-run horizon, all three factors may be operative: in the long run, the supply of labour is relatively inelastic; labour demand is highly elastic due to international outsourcing options; and benefits from payroll taxation, are frequently perceived to obtain due to the equivalence principle. One of these is sufficient to lead to complete shifting of tax onto labour – and in the highly open Dutch economy the elasticity of labour demand is likely to be quite high. This could explain the finding that the long-incidence of labour taxation falls squarely on labour.

This fact has little if anything to say about the short run, however. While the advanced economies have grown almost inexorably over the past 150 years and continue to do so, their growth paths are punctuated by expansions and contractions. The past two years have made it plain to all that proclamations of “great moderation” and the “death of the business cycle” were highly premature. In 2009, the first year of the Great Recession and in the wake of the global financial crisis, real GDP declined by 4.2% in the Netherlands, by 5.3% in Germany and by 2.7% in the United States of America. As tempting as the wage bill is as a steady source of revenues for social security, relying on it represents an Achilles heel for social policy in economic downturns. Consider the case of the Netherlands. According to the OECD, employment declined by about 2% from the fourth quarter of 2008 to the fourth quarter of 2009. Yet during the same year, total contributions to social insurance actually rose by 4%! This development, if continued, will not bode well for job seekers in the Netherlands in the next three years, especially those new workers with low or relatively modest productivity.

[5] Economic theory predicts strictly constant labour shares when production exhibits constant returns to scale and constant elasticities with respect to its inputs, and when labour is paid competitively, that is, according to its marginal product. The central neoclassical tenet of income distribution thus appears invalid in the short-term horizon. Account needs to be taken of labour market imperfections in the short to medium run, be they due to collective bargaining, search and matching frictions, or monopsony power.

Why would financing the social security system react to an economic downturn in this perverse way? In research with Mark Weder from the University of Adelaide, an interesting and paradoxical fact has emerged: in a large number of OECD countries, payroll taxation is negatively correlated with the business cycle. This means that tax rates tend to rise in recessions and fall in booms. In our theoretical work, we also show that this perverse reaction could represent an important source of business cycle risk. Consider the average payroll tax on labour, as the ratio of the sum of all payroll taxes (total social security contributions by employers and employees) levied during a period, divided by total compensation to labour during the same period, including those same contributions. In Figure 2, I plot this tax rate (TAU) for the Netherlands, Germany and the United States of America. We see several sharp movements in the effective rate of tax on labour in Germany and the Netherlands (Germany before 1991 is only West Germany). In both countries, we observe increases in the rate of labour taxation in the 1970s and early 1980s. We can further trace the financing of the reunification episode in Germany as well as the consequences of the famous Wassenaar Accord of 1982, which began to take shape in the early 1980s as well as further structural reforms of Dutch social security in the 1990s.

Figure 2. Average payroll tax rate (TAU) in the Netherlands (NL), Germany (D) and the United States of America (USA), 1970-2008



Source: OECD

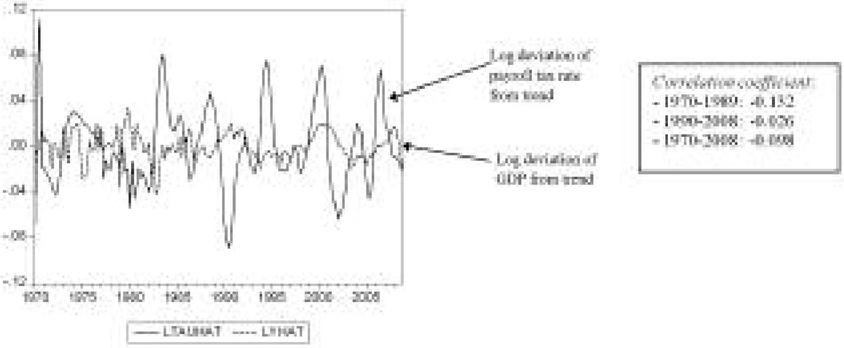
To identify cyclical variation more clearly it is necessary to remove the underlying trends in both the tax rate TAU as well as data for GDP, which are dominated by the growth trend. The resulting adjusted data are plotted against time in Figure 3. In addition, I have calculated a simple correlation coefficient between the detrended tax rate and detrended GDP (both in logarithms). Evidently, the correlation is by no means uniform over countries or even over time. Nevertheless, our research shows that continental European countries tend to exhibit negative correlation while "Anglo-US" and Scandinavian countries tend to exhibit zero or even positive correlation.

Accounting for these facts is straightforward. The average payroll tax burden faced by labour will behave countercyclically if the numerator rises less rapidly than the denominator in booms and falls less rapidly in recessions. One reason for this is that social security contributions are generally capped from above in OECD countries. In the Netherlands, payroll taxes for social minimum benefits are paid on the first two income tax brackets and contributions for earnings related benefits are capped at about 1.5 times average income, above which there is no more tax. In Germany, gross pay in excess of the *Beitragsbemessungsgrenze* (contributions base) is exempt from contributions to social insurance. In the United States of America, only income below $102,000 was subject to FICA (social security payroll) tax in 2008. Thus, in periods when aggregate wage growth is high, growth in payroll tax revenues will not keep pace. Second, social security contributions are usually due with some lag. If social security payments are adjusted only with delay, contribution liabilities accrued at the cusp of a boom will lead to effective payments rising even after the recession has begun. Policymakers may also vary payroll taxation *actively* over the cycle. A fully-funded pay-as-you-go pension or unemployment benefit system may mandate increases in tax rates to make up for revenue shortfalls in recessions. In booms when funds are flush, reductions in contribution rates are popular and politically easy to enact. The behavior of German policymakers since the 1980s falls into this mold. In this way German unification was financed – without fanfare, via the social insurance system.

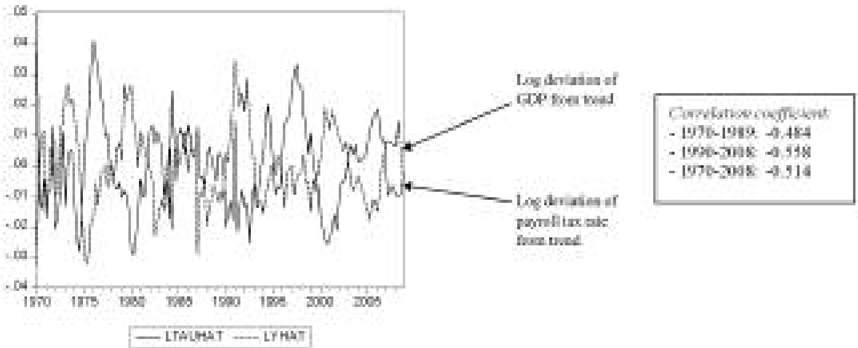
For the OECD countries studied, several showed significantly negative correlations of taxation and GDP, among these France (-.39), Finland (-.48) and Germany (-.56) as well as in other countries in the more recent period (Burda and Weder, 2010). Our model-theoretical research suggests that countercyclical tax rates will emerge in economies with strictly Bismarckian, that is unsubsidised, social security systems. For example, health insurance contribution rates are frequently raised in

Figure 3. Detrended average payroll tax rate (LTAUHAT) and GDP (LYHAT)

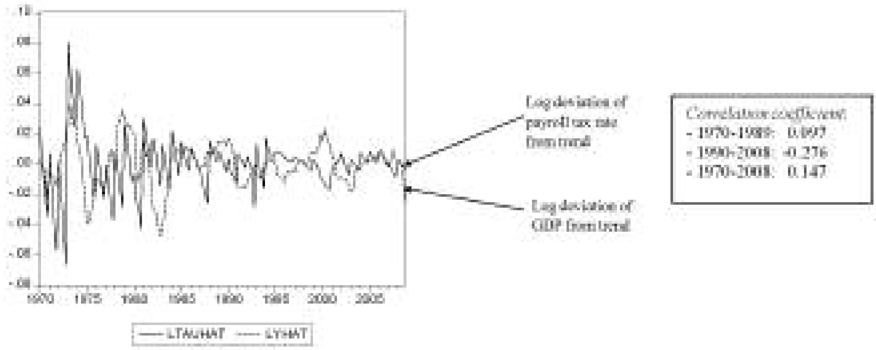
Netherlands



Germany



United States of America



Source: OECD, author's calculations. Quarterly data in natural logarithms, HP-detrended (λ=1600), West and all-German data chained at 1992:1.

Germany during economic downturns, as are those for the unemployment insurance scheme. We show that the tax rate can act as a drag on economies as they struggle to emerge from a recession. Markets anticipate the worsening of burden placed on labour in recessions by countercyclical payroll taxation, and firms postpone the posting of vacancies and hiring workers. The intensity of this interaction depends on the bargaining strength of workers, among other things. If workers are well-represented in wage determination by labour unions, the danger of payroll tax-driven prolongation of the business cycle are commensurately greater, as workers are able to push forward the incidence of the tax, in the short run at least.

4. What is to be done?

The policy implications of my discussion are clear, but by no means new. In an influential article in the 1936 volume of the *Journal of Political Economy*, Nicholas Kaldor endorsed wage subsidies as a solution to high unemployment, for example, by varying payroll taxation *pro*cyclically over the business cycle (Kaldor 1936:729). Two years later in 1938, the Oxford economist James Meade published a book entitled "Consumers' Credits and Unemployment," in which he proposed fighting economic downturns by reducing social security contributions. Similarly, Lord Beveridge, commenting in the *Economic Journal* on the British Government's White Paper on Employment Policy of May 26, 1944, praised the suggestion of varying unemployment contributions procyclically, however "with a view to making consumption more stable" (Beveridge 1944). Like John Maynard Keynes, Beveridge was more concerned with the effects on aggregate demand than on the supply side, arguing that "variation might with advantage be confined to the employee's contribution" (Beveridge 1944, p.166).[6]

A parallel discussion can be found among Dutch economists. An early example is van Praag and van Beek (1991), who identified the vicious cycle of unemployment, rising payroll taxes, and loss of competitiveness, which in turn lead to further

[6] Keynes, after a lengthy disagreement with Meade, finally agreed to the idea in a letter dated July 1, 1942: "Thanks for letting me see the more detailed version of your schemes for varying the rate of social security contributions. As I said before, I am converted to the general principle of this. It does not seem to me to present any particular difficulties in working out, and this is made obvious by your scheme, which is quite a simple one." (*The Collected Writings of John Maynard Keynes 1980*: Vol 27:217-8).

increases in unemployment (van Praag and van Beek, pp.292-293); their solution is similar to Kaldor's, cutting contributions in recessions and raising them in booms. Yet the Dutch may have already implemented this policy in the course of pragmatic, disciplined collective bargaining. As a small country, the Netherlands has traditionally excelled at organising political elites to tackle policy questions. While a more detailed investigation would go beyond the scope of this lecture, my data show a weakly positive correlation of employers' rate of social contributions with the business cycle (correlation coefficient of 0.275), while the correlation of employer and employee contribution rates is strongly negative (-0.532). This evidence is suggestive of give-and-take among the collective bargaining parties and typical of a corporatist approach.

Not all countries can implement this particularly Dutch form of liberal "small-state corporatism" (Katzenstein 1985). While it is likely to be politically difficult to implement a procyclical payroll tax rule, there may be alternatives. In the current downturn, Germany appears to have achieved a break with previous decades, and has managed to reduce the social security burden sharply. While German GDP plummeted by 5.3% in 2009 and worker compensation fell by 5.7%, social security contributions declined by a whopping 8.4%, implying a drop in the overall payroll tax burden on labour. This striking outcome is in part due to the aggressive use of short-time working (*Kurzarbeit*) for a significant fraction of the labour force – 1.15 million workers on average in 2009, with a peak in May of 1.5 million. During the current recession, the Federal Employment Office generously agreed to assume social security contributions for workers in the short-time programme, especially if these workers were put in retraining programmes.

5. Concluding remarks

My lecture has been about financing the social security system in the long and the short run. As the Dutch have learned the hard way, generous social security is not a free lunch. Strong economic growth of the immediate postwar period created space for generous social spending in the 1950s and 1960s, but a slowdown of that growth set a nasty trap in the 1970s. Labour costs and unemployment continued to grow at a steady pace until the early 1980s, and the political economy of entitlements made the reduction of social expenditures increasingly difficult. In a world with social minima imposed by the state from below and an opportunity cost of capital imposed by the global economy from above – the scope for payroll taxation to fund the social welfare state became increasingly limited. Mobility of capital and the pressures of international competition forced the retrenchment associated with the Wassenaar Accord of 1982, and after two decades the Dutch economy has emerged from this trap, creating a virtuous circle of falling unemployment and social burdens in the process. Starting with pensions, then disability, then unemployment benefits, the secular growth in social security has been halted and reversed. This is because in a globalised world, labour taxation is ultimately borne by the immobile factor labour. This has led to real decreases in private command over resources. Even the Polder model of solidarity has its limits when faced with the stark truths of fundamental economic laws. The price of a comprehensive system of social security is the real possibility that we may not be able to make the same claims to our future grandchildren that our grandparents made to us – or at least not in the material, private sense.

I have argued that a more subtle effect of social insurance finance emanates from short-run considerations. Payroll taxation represents a massive government intervention in the economy which distorts the short-run behaviour of agents. My research with Mark Weder has shown that modern systems of payroll taxation can have a perverse tendency to work against an economy's ability to recover rapidly from the downturns in the business cycle, those business cycle fluctuations which continue to occur even in a postmodern age. Among other things, cyclical variation in the pay distribution and the truncated nature of social security contributions imply countercyclical tax burdens on labour. The empirical association of payroll taxation with higher unemployment and lower growth (for example Daveri and Tabellini, 2000) may be thus more relevant for the short rather than the long run. Payroll taxes can interact with the business cycle in nefarious ways. Countries with large public sectors must continue to fund inflexible obligations in the short run during temporary downturns – and the temptation to tax immobile labour remains great. The golden rule for the finance of social security must lie in a stabilisation of the labour burden and socialisation of losses over the business cycle – and this means funding those shortfalls from general tax revenues.

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Michael C. Burda has been Professor of Economics at the Humboldt-Universität zu Berlin since August 1993. His research and teaching interests are primarily in Macro-economics and labour economics, in particular applied to problems of unemployment and European integration. Burda received his Ph.D. at Harvard University, USA, in 1987. From 1987-1993 he was an Assistant and Associate Professor of Economics at the *Institut Europeen d'Administration des Affaires* (INSEAD) at Fontainebleau, France. Since 2007, he has also served as Visiting Professor of Economics at the European School of Management and Technology (ESMT), Berlin. With Charles Wyplosz (Geneva), Burda is author of the textbook *Macroeconomics: A European Text* (5th edition, Oxford University Press, 2009), which was first published in 1993 and has been since translated into twelve languages. Other recent publications of note are *Working Hours and Job Sharing in the EU and USA: Are Europeans Lazy? Or Americans Crazy?* (with F. Kramarz and T. Boeri). Oxford: Oxford University Press, 2008. "Factor Reallocation in Eastern Germany after Reunification," *American Economic Review* 96 (2006) and "Preferences for Rigid versus Individualized Wage Setting" (with T. Boeri) *Economic Journal* 119 (2009).

DUISENBERG LECTURE

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1. 2008: Tito Boeri — *What Happened to European Mass Unemployment?* Published by NIAS, 2008

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