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NOTES AND COMMUNICATIONS

INNOVATION IN THE NETHERLANDS: THE MARKET FALTERS AND THE GOVERNMENT FAILS

SUMMARY OF THE 2004 ANNUAL MEETING PAPERS OF THE ROYAL NETHERLANDS ECONOMIC ASSOCIATION

> "A consensus is emerging that US institutions foster creative destruction and financial markets that welcome innovation, while Europe remains under the control of corporatist institutions that dampen competition and inhibit new entry" (Gordon (2004a, 2004b)).

1 INTRODUCTION

Discussions about innovation and the knowledge economy are as topical these days as the chatter about the 'new economy' was some years ago. A somewhat down to earth approach seems to be called for, however, without underestimating the importance of innovation for socio-economic outcomes and economic welfare. Innovation and the role of markets and the government is the theme the 'Preadviezen 2004' (Proceedings of the Annual Meeting 2004) of the Royal Dutch Economic Association (Jacobs and Theeuwes (2004)).

A discussion about innovation should not be restricted to research, development and technology, but should extend to the role that goods-, capital-, labour- and education markets play. The performance of each of these markets may strengthen or obstruct innovation. Market failure and the role of government policies to reduce market failures are the focal points of the chapters in the Preadviezen. The Preadviezen consist of different chapters dealing with the various markets interlaced with columns allowing the reader to alternate between thorough academic discussions and briefer commentaries.

This article summarizes the Preadviezen. We review the content of each of the chapters and columns, interpret the findings, and draw conclusions.[1] The second section starts by drawing a picture of a wealthy but stagnating Dutch economy. The third section continues with an examination of the various

1 Hoping of course that we do justice to the authors of the chapters and the columns and absolving them of all errors in judgment and otherwise that follow from the interpretation and the conclusions we drawn in this article. We would like to thank the authors of the chapters and columnists for their vast efforts and their impressive contributions to the Preadviezen. We have enjoyed working with them.

chapters on the different markets searching for possible explanations of this phenomenon. We mix the opinions of the columnists with the analysis of the chapters. The fourth section briefly discusses the Lisbon agenda, which plays a central role in government policies on innovation. The fifth and final section draws conclusions.

2 THE NETHERLANDS: WEALTHY, BUT STAGNANT

The first chapter in the book, aptly titled "From slowdown to speedup", is written by Fré Huizinga, Paul Tang and Henry van der Wiel. It reviews recent Dutch economic history and provides an international comparison of the development of labour productivity and total factor productivity. Some interesting conclusions are drawn.

2.1 *High Level of Labour Productivity, But Low Growth Rate*

At present, the level of (labour-) productivity per hour worked in the Netherlands is around 5 percent higher than in the US. Differences in income per capita are caused by differences in the utilisation of labour and not – as is often claimed – by lower labour productivity. At the same time, there is reason for concern because the Dutch and European growth rates of labour productivity slowed down in the nineties while they accelerated in the US. A higher growth of total factor productivity in the US and lower investments in capital goods in the Netherlands (in spite of a lower rate of interest) are important reasons for lagging productivity growth.

2.2 *Opportunities for Catching up have been Exhausted*

Quoting the Sapir et al. report (2003), Huizinga et al. blame the slowdown in productivity growth on the reduced possibilities to adopt, imitate and diffuse more advanced foreign technology. Post-war possibilities to catch up with the technologically most advanced country, the US, have been exhausted. Hence, the historical phase of *catching up* has ended. Whereas the US seem to be very successful in generating their own productivity growth, the Netherlands now has to mine its own sources of productivity growth instead of catching up.

2.3 *Productivity in ICT-using Sectors Lags Behind*

The slowdown of productivity growth in the Netherlands relative to the US is not due to a too low level of ICT investments in the Netherlands, but rather in failing to reap the benefits of ICT-technology in ICT-using sectors such as retail trade, wholesale, banking and insurance. A possible explanation for

this phenomenon is that there is not enough competition in these sectors and, hence, economic incentives to increase productivity growth are lacking.

2.4 *Private Investment in Schooling and Research and Development is Low*

Innovative expenditures on research and development and on (higher) education are low in the Netherlands judging by international standards. This is mainly due to a low level of *private* investments in both R&D and education. On the other hand, there exists no clear and obvious relationship between lagging R&D and educational investments, and productivity growth. ICT investments are relatively high in the Netherlands compared with the rest of Europe. Importantly, the effectiveness of innovative investments seems to be diminishing.

2.5 *Wage Moderation is not the Cause of Lower Productivity Growth*

Alfred Kleinknecht's well known argument that wage moderation is the culprit in lagging labour productivity growth is challenged and contradicted by Huizinga et al. In the short run, wage increases do indeed lead to an increase in labour productivity, as firms will reduce labour demand and substitute towards the use of physical capital. However, higher labour costs reduce the rate of return on investments in capital and new technology. Hence, in the long run, the capital and technology stocks should fall, resulting in a lower level of labour productivity and/or a higher level of unemployment. An empirical analysis of the Dutch labour market in the 1980s confirms this hypothesis. The economic depression of the 1980s is an unintended and sad illustration of the incorrectness of Kleinknecht's argument.

2.6 *Increase in Employment is not Causing a Decrease in Labour Productivity Growth*

It is sometimes suggested that slow productivity growth in the Netherlands is caused by formidable employment growth in the nineties. Average labour productivity should fall if less productive workers enter the labour market from unemployment, disability or social assistance rolls. But this does not seem to be the case for the Netherlands. Although the argument is analytically correct, the changes in the composition of Dutch employment have had an empirically negligible effect on labour productivity.

2.7 *Summing up*

To conclude, the introductory chapter by Huizinga, Tang and van der Wiel provides ample food for thought and we have to dig deeper if we want to answer the question whether or not the Dutch economy is sufficiently

innovative. Private investment in R&D and education is low, the effectiveness of ICT investment seems to be a problem, and various barriers may exist which inhibit innovation. Lack of productivity growth and lacklustre innovation should certainly not be blamed on wage moderation policies and on greater labour force participation by less qualified workers.

3 WHY DOES THE NETHERLANDS STAY BEHIND?

The next chapters in the Preadviezen 2004 deal with markets that are of vital importance for innovation: the market for technology, the market for goods and services, the capital market, the labour market and the market for education. In each of these chapters we try to indicate the fundamental factors that are at the core of the disappointing labour productivity growth and the lack of innovative strength in the Netherlands.

3.1 *The Market for Technology*

3.1.1 *Low private investment in R&D*

In their contribution, Maarten Cornet and Jeroen van de Ven corroborate earlier empirical findings that private firms do not sufficiently invest in R&D. The market for new technology fails because technological knowledge can be easily copied by third parties and can be disseminated at no cost. In economic jargon: knowledge is non-rivalrous and non-excludable and, in this sense, is (partially) a public good. Private firms may therefore be expected to under-invest from a social point of view and government intervention makes sense. The Dutch government behaves accordingly. Public expenditure on R&D (0.8% of GDP) is above the OECD average (slightly above 0.6% GDP). But private expenditures on R&D in the Netherlands (1% GDP) are substantially below the OECD average of 1.5% GDP. How is it possible that private firms invest so little in R&D while the government so strongly supports these investments?

3.1.2 *Low effectiveness of R&D policies*

Cornet and van de Ven point out a large number of problems inherent to government policy instruments that attempt to internalize the positive externalities of R&D. These government failures seriously impair the effectiveness of R&D policies. Eric Bartelsman and Hugo Keuzenkamp mention similar fundamental problems of innovation policies in their columns. Sweder van Wijnbergen takes this argument to the extreme and argues that innovation policy should only be generic and the government must stop directing subsidies towards specific R&D projects. Cornet and van de Ven discuss various policy instruments such as wage subsidies for R&D personnel, patents and public–private partnerships.

To be sure, the government can encourage private investments in R&D by subsidizing them. However, subsidies often generate little additional R&D investments. Subsidies have dead weight costs since investments in R&D that would have been undertaken anyhow, are also subsidized. Subsidies may be provided for investments whose returns are too low from a social point of view. Subsidies may crowd-out non-subsidized investments in R&D. Firms may present costs to the government in the guise of R&D.

If subsidies are effective, they lead to an increased demand for R&D personnel and hence to wage increases if such personnel is in short supply. However, Bas Jacobs and Dinand Webbink argue in their chapter that there is no shortage of R&D workers on the Dutch labour market. The fundamental reason for government failure is that the government faces information problems which make it almost impossible to target subsidies on R&D projects with sufficiently high social returns. If subsidies are badly targeted, their effectiveness is greatly diminished and may even approach zero. Hence, these findings are in accordance with the conclusion in the chapter of Huizinga et al. that high R&D expenditures do not necessarily lead to high productivity growth. Cornet and van de Ven are very critical about the appropriateness of a '*backing the winners*' policy as recently suggested by the Advisory Council for Science and Technology Policy ('Adviesraad voor Wetenschaps- en Technologiebeleid'). By giving subsidies to the technologically leading incumbents, the entry of innovative firms will be obstructed and will hardly raise R&D investments.

Patents provide the inventor with a monopoly on his invention. In this way, patents solve the problem of not being able to fully appropriate the returns on an invention. At the same time, patents hamper wider use of the invention and hinder diffusion of (technological) knowledge. Cornet and van de Ven argue that patents are an impediment, especially when the returns on knowledge diffusion increase. In their columns, Sweder van Wijnbergen and Rick van der Ploeg vehemently reject the patenting of academic research in order to stimulate commercial applications. Instead they insist on an increase in public expenditures for fundamental scientific research.

Businesses and government jointly invest in R&D initiatives in public-private partnerships. This public–private form of cooperation strengthens the diffusion of knowledge between universities and private firms. At present, diffusion is not optimal because academic knowledge is not sufficiently applicable in commercial uses. Also, the interests of commercial business and academia are not aligned which results in a mismatch between demand and supply of knowledge. Examples of public–private initiatives in the Netherlands are the Technological Top Institutes, commercially financed academic research (so called 'derde geldstroom') and the ICES-KIS programmes ('Interdepartementale Commissie voor Economische

Structuurversterking – Kennisinfrastructuur'). Cornet and van de Ven conclude that the effectiveness of private–public partnerships is hard to measure. Van Wijnbergen, on the other hand, is more positive about these projects.

3.1.3 *Augment effectiveness of R&D policy*
To conclude, the market for new technology fails and more private investment in R&D is required. It is doubtful whether more public investment in R&D is currently effective because the government also fails for a variety of reasons. Hence, the effectiveness of public instruments can be doubted. Increasing the effectiveness of public instruments is a prerequisite for increasing private R&D effort. Cornet and van de Ven make a strong case for using double blind socio-economic experiments with randomly assigned treatment and control groups to test the effectiveness of public instruments.

3.2 *The Goods Market*

3.2.1 *More competition is not always optimal*
In their chapter, Jan Boone and Erik van Damme deal with the question how competition in the market for goods and services affects the level of innovation in the Dutch economy. One cannot boldly claim that there is either too much or too little competition in a given sector and that, correspondingly, there is too much or too little innovation. The incentives for innovation increase if there are more players in the market because the return on innovation increases with competition. A monopolist hardly has an incentive to innovate since he will drive his own product from the market, thereby foregoing his monopoly profits. Hence, a monopolist hurts himself by being innovative. In competitive markets there are no such losses for the innovative entrant since he has no monopoly profits to sacrifice. In the literature, the difference in profits from innovation in competitive and monopolistic markets is known as the *Arrow effect*. Yet, at the same time innovation has spill-over effects: competitors will profit from each other's R&D efforts. Thus, spill-over effects reduce incentives to innovate. With fewer competitors there are fewer potential free-riders, and, hence, incentives to innovate are stronger because firms can appropriate relatively more of the returns on their own R&D investments. To conclude, the intensity of competition has an ambiguous effect on the willingness to innovate.

Which of the two effects dominates depends on the composition of the firms operating in a sector. A '*level*' sector consists predominantly of firms with comparable productivity levels. A higher intensity of competition in a level sector will stimulate innovation because the positive *Arrow effect* dominates the reduced spill-overs from R&D. Firms in level sectors will concentrate on *incremental* innovations. In an '*unlevel*' sector, with substantial differences between leading and lagging firms, a higher intensity of

competition will lead to fewer innovations. The *Arrow* effect is too small in such markets to compensate for reduced spill-over effects. Hence, potential entrants will not make a sufficient return on their *drastic* innovations.

When we start from a market situation with a low intensity of competition and with a high probability of being a level sector, an increase in the intensity of competition will be favourable for innovation. Increased innovation, however, will probably make the sector more unlevel and, in this way, returns on innovation decrease as competition increases. At some point, the sector may become so unlevel that more competition will hinder innovation. Hence, the relationship between the intensity of competition and innovation is an inverted U-shaped curve. More competition initially generates more innovation, but less innovation beyond a critical point when competition further intensifies.

3.2.2 *More competition is good in 'level' sectors*

Boone and van Damme's policy advice is to increase competition in level sectors and decrease competition in unlevel sectors. The sector is unlevel if a single firm has been very dominant in recent years (like Microsoft). Level sectors are sectors where multiple firm's sizes are of similar order and where market dominance alternates among different firms over time. A possible reason for the lacklustre growth in ICT-using sectors might be an insufficient level of competition, as has been noted above. These sectors comprise retail, wholesale, banking and insurance firms. There is a presumption that these sectors are fairly 'level' with different players having comparable levels of productivity. Consequently, increased competition is required to generate more innovation. In his column Enrico Perotti argues that competition should be increased not only in the banking sector but also among hospitals, schools and universities.

3.2.3 *'Backing challengers'*

Like Cornet and van de Ven, Boone and van Damme also recommend that innovation policies should not be geared towards 'winners' as proposed by the Advisory Council for Science and Technology Policy. In this case, winners are even more 'pampered' and their market dominance increases even further. Innovation policy should instead be directed at '*backing the challengers*', that is, by supporting potential entrants into the market. This should also increase the incentive for winners to keep innovating. Boone and van Damme do not tell us how such a policy could be given hand and feet. As has been shown in previous chapters, it is not straightforward to develop simple and effective policy measures for innovation.

3.3 *The Capital Market*

3.3.1 *Failing capital markets*

In the next chapter, Arnoud Boot and Anjolein Schmeits argue that capital markets fail. Innovative firms under-invest because of information problems between them and financial institutions. Financial institutions cannot reliably predict whether the firm applying for a loan is a fair risk or whether the business manager is a crook. Problems of asymmetric information increase the capital costs of firms and credit may be rationed. Capital market failures reduce the level of innovation in the Dutch economy and put a break on innovative investments. It could be that problems in the capital market explain why investments in the Netherlands lagged those in the US in the 1990s, in spite of a historically low interest rate (see Huizinga et al. above). This resulted in a disappointingly low rate of labour productivity growth.

3.3.2 *No subsidies!*

In order to increase innovation, government intervention would be required to increase the availability of investment capital for (innovative) businesses. But how? Boot and Schmeits leave no room for doubt in this respect: the government should not give subsidies but instead should engage in public–private partnerships. They give a sad but instructive list of completely ineffective subsidy-programmes that try to guarantee accessibility to the capital market. Examples are: the legal investment directive ('Wet Investeringsregeling', WIR), the Dutch restructuring company ('Nederlandse Herstructureringsmaatschappij', NEHEM) and the company for industrial projects ('Maatschappij voor Industriële Projecten', MIP).

3.3.3 *Public-private partnerships*

Public–private projects are generally more effective than the subsidies just mentioned. If the government combines deferred loans, guarantees and (minority) participations with private financing it can open up the capital market for (starting) firms at relatively minor costs. A substantial share of private co-financing of start-ups introduces financial market discipline. Hence, firms running excessive financial risks or having flawed management are unlikely to profit from government incentives since they will not be able to raise private funds. Boot and Schmeits view the financial guarantees for small and medium-sized firms ('Borgstellingsregeling Midden- en Kleinbedrijf', BMKB) as rather successful. Also the special financial provision ('Regeling Bijzondere Financiering', RBF) is of interest, although the authors are critical of this provision since it adds little value to the existing supply of private venture capital. Finally, the incentive provided by the 'Aunt Agaath' provision ('Tante Agaath Regeling', TAR) is viewed as helpful in increasing

the supply of risk capital. We want to add, however, that the public costs of these fiscal subsidies increase with their success.

3.3.4 *Too much market power for banks*
Boot and Schmeits are apprehensive about the build up of market power in the banking sector as a result of recent trends towards concentration in the financial sector. This reduces the accessibility of the capital market for smaller firms and, thereby, harms innovation in the Netherlands. They also argue that market concentration has worse consequences in the Netherlands than, for instance, in the US because there have hardly been any new credit suppliers for small firms. Their warning is consistent with the lower productivity growth rate in ICT-using service sectors, such as banking, as shown empirically by Huizinga et al. The latter blame lower growth rates on the lack of competition.

3.3.5 *More public-private cooperation and more competition*
To conclude: capital markets fail. This results in underinvestment by innovative firms and curb innovation. The government can correct these market failures but how? Subsidies for firms to cover financial risks or to reduce financial costs are not effective and are not to be recommended. Public–private partnerships, whereby the government and the private sector invest jointly, are to a certain extent more successful. The advice is to continue and experiment even more with such policies. Concentration of market power with a few players in the banking sector increases problems with accessibility to financial resources for small and medium sized firms. More competition would be desirable. This might require renewed attention by the Dutch Competition Authority.

3.4 *The Labour Market*

3.4.1 *More flexibility supports innovation*
Lans Bovenberg and Jules Theeuwes show in their chapter that labour market flexibility contributes to innovation, because flexibility facilitates the introduction and implementation of new production processes. They show that labour market flexibility increases if workers can be easily (re-)assigned to different tasks and if workers can easily change jobs. Investment in human capital through on-the-job training allows workers to adjust to changing circumstances. Bovenberg and Theeuwes do not find many indications that private parties fail to invest sufficiently in training.

3.4.2 *More flexibility generates more inequality*
More labour market flexibility, however, goes along with more income inequality and job insecurity. This is seen as socially undesirable and provides

a strong reason for government intervention to make up for the unpleasant consequences of labour market dynamics through dismissal protection, unemployment benefits, sickness or disability benefits, intergenerational risk sharing in pension systems and generous fiscal support for pension savings.

3.4.3 *Combating inequality curbs investment in human capital*
Bovenberg and Theeuwes show that measures directed towards reducing inequality and labour market risks have negative effects on investments in human capital. If taxes are more progressive and benefits are higher, people reduce their labour supply and labour force participation drops. Hence, the returns on investment in human capital diminish because its utilization rate falls. Investment in human capital at the lower end of the labour market is hardly profitable on account of the poverty trap. Income-related subsidies, such as rental assistance and partial or total exemption from local taxes, drive up marginal tax rates on work effort to 100% or more. Consequently, it does not pay to invest in human capital either.

Bovenberg and Theeuwes also conclude that the human capital of workers depreciates very rapidly due to various government programmes. Retirement ages have not been increasing in spite of increasing life expectancy. On the contrary, workers retire earlier and leave the labour force through various subsidised routes, such as early retirement, pre-pension schemes and disability benefits. Accordingly, it does not make sense from an economic viewpoint to invest in human capital as workers grow older.

It is, on the other hand, far more profitable to neglect investment in human capital and to invest in financial capital. People do not need to worry about their decreasing labour productivity and about loosing their attractiveness for the labour market if they can built up a sizable kitty for their old age with the help of extremely generous fiscal subsidies for pension savings and owner-occupied housing. Total (net) government expenditures on these two subsidies equal about 4.5% of GDP in 2000. This is nearly as much as expenditure on basic, secondary and higher education (4.8% of GDP in 2000).

3.4.4 *Combating inequality distorts the performance of the labour market*
Measures to combat income inequality distort the performance of the labour market because workers are not willing to adapt to the dynamics of the labour market. Policy measures such as long and generous unemployment and disability payments induce workers who loose their jobs to stay out of the labour market permanently and to let their labour skills whither away (hysteresis).

3.4.5 *More labour market flexibility comes at a price*
Labour market flexibility is important for innovation. However, flexibility is accompanied by greater inequality and uncertainty. Currently, income

inequality is kept within bounds and risks are insured through public arrangements. Government intervention to reduce or compensate for inequality and uncertainty can be legitimate, but can easily turn into government failure as it distorts the functioning of the labour market and reduces the incentives to accumulate human capital. Only by increasing the effectiveness of government intervention (in other words, by avoiding institutional failure), can labour market flexibility be increased without sacrificing income protection for workers. Bovenberg and Theeuwes suggest a number of measures to achieve this goal.

At the lower end of the labour market, training incentives will only be effective if the income difference between out-of-work benefits and in-work labour income increases. This can be achieved by, among others, tax rebates for workers, possibly combined with a reduction of the minimum wage, active labour market policies and stricter requirements and sanctions in handing out social benefits. It seems wise to target interventions at youngsters who, for various reasons, lag in learning and schooling. Currently, investment in human capital of many teenagers is often at risk due to high drop-out rates in secondary schools (a phenomenon that is likely to increase in the future). It is better to prevent failures in human capital investment than trying to remedy these at a later stage. Beyond the age of 18 it is hard and hardly ever effective or efficient from an economic point of view to repair insufficient human capital investments.

Bovenberg and Theeuwes make the case that disincentives for investment in human capital at higher ages should be reduced in various areas: lower fiscal subsidies for pension savings and owner-occupied housing, increased labour force participation by elderly workers and a higher retirement age. In his column van der Ploeg also pleads for a reduction in the fiscal subsidization of pensions and home ownership.

3.4.6 *Strengthen the position of outsiders!*

The labour market for insiders (mostly elderly, white, Dutch men) is heavily protected, implying that the outsiders (the young, women, and ethnic minorities) are confronted with greater economic risk, because they work part-time, in flexible jobs, have fewer social insurance rights, face pension breaks, and so on. Labour market restructuring usually causes elderly workers to leave the labour market permanently. With pension rights being based on the level of wages in the last three years of employment, it does not make sense for elderly workers to accept lower wages in order to preserve jobs. Pension risks are shifted to younger generations through collective agreements that are legally binding for all workers. Sustaining the insiders' market power through fiscal means promotes inflexibility and reduces the innovative capacity of the Netherlands, just as in other markets. With excessive protection of insiders, the labour market will be characterised by sclerosis rather than flexibility. If

at all possible, policy should be aimed at empowering the outsiders so as to make the labour market more flexible. Again, the creed is best expressed as '*backing the challengers*'.

Another issue is wage formation. The decision to invest in human capital, and if so, in what type of human capital is crucial in a knowledge based economy. Compensation policies should be contingent on these decisions. Whether or not the Dutch corporatist structure of wage setting allows for a compensation policy based on individual performance, is open to debate. Teulings argues that the corporatist structure helps to resolve the hold up problems due to investments in firm specific human capital. These hold up problems are likely to become more severe in a knowledge based economy. The corporatist wage bargaining mainly deals with the aggregate wage adjustment. Some claim that individual employers and employees are still left with sufficient flexibility to reward individual performance. Others are more sceptical in this respect.

3.5 *The Market for Education*

3.5.1 *Education is important for productivity, not for innovation*

In their chapter, Bas Jacobs and Dinand Webbink discuss the role of (higher) education in the promoting innovation and the effects of education on (labour) productivity. Empirical research has convincingly shown that education increases labour productivity. However, the link between higher education and innovation is weak. A possible explanation might be that only a minor part of higher educated workers moves into innovative jobs.

Jacobs and Webbink show that Dutch public expenditure on higher education is relatively high, whereas private expenditure is low compared to other countries. Dutch public expenditure on higher education (1.0% of GDP) is above the OECD average (0.9% of GDP), but private expenditure is 0.7% points of GDP below the OECD average (0.2% versus 0.9% GDP) (OECD, 2003). Again, this raises questions about the effectiveness of Dutch public expenditure on education, similar to the discussion on R&D. High levels of public expenditure do not seem to encourage private investment.

3.5.2 *No external effects*

An often cited reason for government intervention in (higher) education is that education generates positive external effects (similar to the R&D case). In the presence of positive external effects, the government is supposed to subsidize education up to the point where the social returns and private returns are equalized. However, in contrast to R&D, external effects of education are notoriously difficult to measure empirically and most reliable estimates suggest that the social return to education equals the private return. Thus, there are clearly no arguments for a further increase in public expenditure on education

at the current level of education subsidies. Rather, there are quite a number of arguments that indicate government failure rather than market failure.

3.5.3 *Government obstructs private investment in higher education*
Jacobs and Webbink argue that private investments in higher education are sub-optimally low. The present institutional setting in the higher education sector effectively puts a ceiling on total private investments. Higher educational institutes are not allowed to set (differentiated) tuition fees themselves. The government fixes tuition rates as well as public contributions. Hence, it is impossible to attract more private investment in higher education, even if individuals are willing to pay for it. In order to stimulate private investment, the government should lift these constraints on private investment in higher education. At the same time it is essential that the government safeguards accessibility to higher education by means of an income-contingent loan scheme (as in Australia). Van Wijnbergen agrees with this line of reasoning

3.5.4 *Accessibility can be guaranteed with fewer subsidies*
It is also possible to raise the effectiveness of public subsidies for higher education by means of an income-contingent loan scheme to ensure accessibility. University graduates have on average such high life-time incomes that they can easily repay the costs of their education. In an income-contingent loan system, repayments are a fraction of earned income. Hence, risk or debt-averse students do not need to worry about larger repayment burdens after graduation. Accordingly, nearly everyone can enrol in higher education without the government having to hand out large subsidies. Hence, accessibility can be ensured at much lower public costs. The question whether or not higher education should be subsidised should depend on presumed external effects, not on accessibility.

3.5.5 *Lack of competition*
According to Jacobs and Webbink, also the proper functioning of the market for higher education is obstructed due to lack of competition. As a consequence of (policy induced) concentration in the higher education sector, publicly financed higher educational institutes have been able to establish a monopoly position which is essentially unchallenged because non-subsidised potential entrants cannot compete with the subsidized monopolists. This development threatens the quality of higher education and is harmful for investments in human capital. Reducing barriers to entry in the market for higher education, by creating a level playing field can stimulate entry, foster competition, make education establishments more efficient and provide students with greater educational choice.

3.5.6 *Bèta's are important for innovation*
Jacobs and Webbink also analyse the labour market for bèta's, i.e., graduates with an engineering, technical, and science education. Although it is hard to establish a link between education and innovation at the macro level, there should be a link between education and innovation at the micro level through R&D. The reason is that higher educated bèta's are the most important factor of R&D production. Since R&D has large positive external effects, the supply of bèta's is therefore of crucial importance for the Dutch innovative capacity.

3.5.7 *No shortage of bèta's*
Technical and science studies have lost substantial popularity in the last two decades. Hence, the supply of bèta's relative to other occupations has decreased. Given an empirically stable level of demand for bèta's, this should have resulted in higher wages for bèta's relative to other occupations. Jacobs and Webbink find, however, that wages for bèta's relative to, for instance, non-bèta's or economists, have remained the same or have been falling! They conclude that labour demand for other occupations must have increased so much that wage pressures due to a reduced supply of bèta's have been off-set – given that demand for bèta's has not decreased. Hence, Jacobs and Webbink conclude that there is no shortage of bèta's.

3.5.8 *Subsidies to increase the supply of bèta's are not effective*
Increasing the supply of Dutch R&D workers in order to internalise the external effects of R&D is not effective because there is ample supply of bèta's. Subsidies for bèta studies are a very inefficient means to increase R&D because two thirds of the money leaks away to students who will not move into R&D. Also, the price elasticity of enrolment in bèta studies is rather low which implies that large subsidies are needed to stimulate enrolment, and students who would have taken a bèta-education without a subsidy now receive a windfall gain.

3.5.9 *Subsidize R&D, not bèta's!*
Jacobs and Webbink favour policies that stimulate R&D activities directly rather than indirectly, even though these subsidies are not without their disadvantages as well (as was shown earlier). In the short run, the supply of bèta's seems to be sufficient. Even in the longer run, a sufficient supply might be guaranteed if migration of bèta's from Eastern Europe and Asia is allowed for. Other occupations should become more attractive if the competition by foreign bèta's increases and reduces the returns on bèta education in the Netherlands. Finally, the Netherlands does not have a comparative advantage in types of R&D that could just as well be performed by Asians and Eastern Europeans.

4 THE LISBON AGENDA

Currently, the Lisbon agenda plays a crucial role in policy discussions about the knowledge economy and innovation. The central creed is that Europe should become the most competitive, knowledge based economy in the world without sacrificing social cohesion. A long list of objectives has been formulated to realise this goal, including the objectives to increase R&D expenditure to 3% of GDP and the employment rate to 70% by 2010. The Lisbon objectives even extend to ecological objectives regarding the reduction of greenhouse gasses. An impressive total of 405 objectives have been formulated for the period till 2010 (SER (2004)). The Balkenende-government adheres to the Lisbon agenda as may be inferred from the Economic Growth Memorandum which has been sent to Parliament by the Minister of Economic Affairs.

The chief aim of the Lisbon agenda seems to be to compare national achievements with the European average, although it is unclear what the welfare economic arguments for these objectives should be. The Lisbon agenda lacks focus and urgency. In its evaluation of the Lisbon strategy, the Dutch Social Economic Council (SER) points at the lack of involvement and interest of national policy makers who do not view the Lisbon agenda as a challenge at the national level. As a consequence the Lisbon agenda will probably grind to a halt (SER (2004), p.18).

The Lisbon Agenda has nothing to say about the optimal level of investment in education or R&D. Increasing expenditures on either R&D or education does not necessarily increase social welfare. As is well known, this crucially depends on the return on these investments. Greater investment will only increase social welfare if socially profitable. The Lisbon strategy remains utterly silent about the social returns on innovative investments.

Moreover, we are inclined to argue that the objectives of the Lisbon agenda resemble planned economy types of government intervention. Perotti criticises this top–down approach in his column. The Preadviezen show that a crucial issue is whether an investment is made by the government or by the market. The Lisbon agenda pays no attention to this vital choice. Even though government intervention can be justified by market failure, this does not necessarily imply that government intervention is effective. In the Preadviezen we emphasized that government failure is prominent in many areas. If government failure grows, then it can actually make sense to move resources from the public to the private sector.

Neither does the Lisbon strategy pay attention to the economic differences between countries. Cornet and van de Ven and Jacobs and Webbink point out that national economies can benefit from specialisation and exploiting comparative advantages. It is not at all evident that the Netherlands has a comparative advantage in ‘hardcore’ R&D. We might just as well have a comparative advantage in the ‘softer’ forms of R&D such as entertainment,

transportation, logistics and design. The Lisbon objective requiring all countries, and hence also the Netherlands, to invest 3% of GDP in 'hardcore' R&D does not make economic sense if countries do not have the same comparative advantage.

The Lisbon strategy ignores the fact that a price has to be paid to become the most competitive and innovative economy in the world. Innovative investments and activities only increase if stronger economic incentives are allowed to work. Stronger economic incentives generally imply more income inequality and more uncertainty. Hence, the Lisbon agenda is internally inconsistent. It is simply impossible to be the most competitive and innovative economy and to be the world champion in social cohesion at the same time. In this field, as in other areas, there is no free lunch.

5 CONCLUSIONS AND POLICY RECOMMENDATIONS

There are obviously clear differences between the chapters in the Preadviezen. Yet, at the same time, there are also some remarkable similarities. Three main strands of thought run through all chapters. First, the markets for technology, capital, goods and services, labour and schooling are all vulnerable to market failure and hence government intervention is legitimate and desirable to stimulate innovation. This also holds for government intervention with respect to income distribution. Second, government intervention to reduce market failure or for distributional reasons often encounters considerable problems of effectiveness and efficiency. Various instances of government failure will in turn impair the incentives for innovation. Third, many sectors of the Dutch economy are not functioning properly because of various forms of market power and this seriously reduces innovative activity in the Netherlands. Empirical findings support these conclusions.

On this basis, two generic policy recommendations emerge. First, government intervention to stimulate innovation is legitimate. But at the same time, the government has to make sure that its interventions are effective. At present, this is not always the case. Subsidies generally score rather badly in terms of effectiveness. Public–private partnerships seem to be more successful. Clearly, more attention has to be paid to the effectiveness of policy instruments. We strongly recommend double-blind socio-economic experiments to test the effectiveness of new policies. In case experiments cannot be conducted, we strongly advocate social cost benefit analyses. Merely increasing government expenditure on innovation seems to be counter-productive in the current institutional setting.

Second, the Preadviezen clearly show that innovation is a matter of competition, both in terms of lowering barriers to market entry and the break-up of cartels and monopolies. If the Netherlands wants to promote innovation, it will have to pave the way for 'outsiders'. Innovators will always threaten

and might even subvert the existing order of things. Many potential flowers are snuffed before they can bloom by the inherent conservatism of the Dutch 'polder' institutions. This is a recurrent theme in most chapters and columns of the Preadviezen. We should take the creed '*backing the challengers*' more seriously. Existing strongholds of power have to be challenged and knocked down. Perotti and van Wijnbergen argue persuasively that the Innovation Platform ('Innovatieplatform') is the ultimate proof of the 'Dutch Polder mentality': the favoured and privileged 'insiders' are asked to direct technology subsidies towards themselves. Also the Dutch Council for Science and Technology Policy recommends that innovative leaders should be given extra subsidies. These practices will not spur innovation, but rather put a break on it, something that is not being understood in The Hague. '*Backing winners*' is old fashioned industry policy in disguise. It is denounced by Cornet and van de Ven and by Boone and van Damme.

Cartels and monopolies should be broken. Perotti makes a case for more competition in schooling, health and banking. According to Huizinga et al. the Dutch economy does not grow because ICT using services (retail, wholesale and insurance) lack competition. Boot and Schmeits contend that market concentration in the banking sector inhibits innovation by obstructing the access of innovative firms to financial resources. Jacobs and Webbink suggest that scale expansion has given strong monopoly positions to universities and higher vocational schools, thereby threatening the quality of higher education. Bovenberg and Theeuwes point to the power of insiders, such as elderly, white Dutch males, in the labour market, who frustrate labour market flexibility and innovative change, often at the expense of outsiders, such as young, women and ethnic minorities.

We wholeheartedly agree with the quote from Robert Gordon's writings cited at the beginning of this article. We need to pave the way for people and businesses who are willing to shake the existing order and attack the comfortable positions of insiders.

The question remains why the Netherlands has not been able to change its institutional setting in spite of all the good intentions expressed by various government cabinets. We can only speculate. In their columns, Bartelsman and Perotti sketch a profound lack of ambition in the Netherlands, a refusal to go for gold and a mentality that does not stimulate innovation: 'act normal, that is already crazy enough' is a well-known Dutch saying. But acting normal is not sufficient for innovation. Perotti emphasises that it will be hard to change the Dutch fondness for regulation and dislike of non-conformity into a winning mentality. Most certainly, the current mentality cannot be changed simply by talking loudly about the need for innovation. Behaviour will not change unless the underlying economic incentives point in the right direction.

To conclude, we suggest the following rather speculative political economy explanation as to why policies do not change. Both the classical left and the conservative right of the political spectrum have a complicated relationship with innovation. Innovation is accompanied by destruction, uncertainty and inequality, which is socially unacceptable to the classical left. The conservative right abhors the idea that existing power positions and privileges of many well-to-do citizens and businesses would be undermined by innovation and innovation enhancing policies. As long as these conservative powers at the left and the right of the political spectrum are able to maintain the *status quo,* not much will happen to increase the innovative strength of the Dutch economy.

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