NEO-SCHUMPETERIAN ECONOMICS: POLITICAL POSSIBILITIES AND PROBLEMS

John Phillimore

There is much talk at present about an emerging political 'third way' between traditional social democracy and the harsh policies of the Thatcherite right. This 'third way' stems in large part from the election victories of Bill Clinton in the USA and Tony Blair in the UK, as well as the victory of Left parties in Italy and France and of the SPD in the 1998 German elections (Freedland, 1998; Giddens, 1998; Kuttner, 1998). The sentiment also finds some support within Australian ranks, disillusioned with the performance of recent 'neo-liberal' Labor governments (Latham, 1998).

The main focus of this 'third way' in the US and UK has so far been on refashioning the welfare state, moving away from a 'welfare entitlement' or 'dependency' mentality towards a system which provides greater incentives - or compulsion - to work. This might involve placing tougher conditions on welfare payments such as a commitment by the welfare recipient to a more active building of individual competencies through education and training, in return for the provision of income support by the state (see Gray, 1998, for a critical analysis of the 'welfare to work' program in the UK under the Blair Labour Government).

In most cases, the 'third way' has been notably absent in the areas of macroeconomic, industry and labour market policy. In these spheres, neo-liberal orthodoxy stands virtually unchallenged; if anything, it is increasing its sphere of influence beyond its Anglo-American heartland. Fiscal restraint, low taxation, privatisation of state assets, reduced union power and increased labour flexibility are still the name of the game.

Government intervention in industry and in product and financial markets continues to be frowned upon by most governments, including those run by nominally left or social democratic parties.

This reluctance to combat neo-liberal economic policy is based partly on conviction and partly on pragmatism. Years of derision by the Left about the perils and poor performance of 'Reaganomics' and 'Thatcherism' are beginning to sound increasingly hollow in the light of consistently lower unemployment rates in the UK and USA. The large welfare states and labour market 'rigidities' of Western Europe are increasingly seen by many within Left parties as unaffordable luxuries. High unemployment also fuels the rise of racist, nationalist, right-wing parties. It seems to many that it is only flexible labour markets, competitive product markets and pro-market industry policies which are capable of appeasing financial markets, increasing economic growth and reducing unemployment (Mandelson and Liddle, 1996).

More pragmatically, a full-blooded return to national Keynesian economic policies - in particular, domestic fiscal expansion to reduce unemployment, increased taxes to strengthen the welfare state, and the imposition of tighter controls over the movement of financial capital - has been commonly regarded as impossible in today's globalised marketplace, given the power of financial markets. The unhappy experience of the French Socialist Government's attempt to implement 'Keynesianism in one country' in the early 1980s, coupled with the extent of global deregulation which has occurred since then, is taken as proof that such a strategy will just not work (Gray, 1998). While calls for an international form of Keynesianism (through measures such as regulation of international capital markets) are increasingly being heard in the aftermath of the Asian currency and economic crisis, national governments do not as yet appear willing to take the first step. Liberal economic policies, intellectually based in neo-classical economic theory, continue to hold sway.

The absence of a sustained challenge to neo-classical economic orthodoxy is a major problem for 'third way' politics. An important part of the 'old' Left's optimism and strength in the post-war boom was its possession of a seemingly coherent economic view of the world, which offered guidance on how to act in a variety of circumstances (most

notably, the need to keep up aggregate demand in the face of impending recessions, through increased public expenditure, support for unions and higher wages, etc). Keynesian policies helped form the basis of a coherent and sustainable political coalition: trade unions, the public sector, welfare recipients. The political Right is currently in a similar position; neo-classical economic theory provides policy-makers with ready-made answers (not solutions) to problems in almost every policy area (i.e., promote markets, introduce competition, etc.), while also having clear benefits for certain interest groups. The 'third way', by contrast, has yet to find a consistent or coherent alternative economic guidance mechanism.

However, all is not yet lost. It is the argument of this paper that, just as a viable political coalition was once built around Keynesian economic policy, it is now possible for a similarly viable political coalition to be formed around an economic approach associated with the legacy of Joseph Schumpeter. The main focus of neo-Schumpeterian economics (NSE) is not on aggregate demand (as with the old Left) or on competition and free markets (as with the new Right), but on innovation. The paper does not argue that such a coalition will necessarily emerge, nor that the policies so adopted will 'solve' the economic problems facing industrialised countries. Nor does it argue that this coalition will be 'progressive' to the same extent or in the same way as the Keynesian-welfare state coalition. It merely argues that the potential exists for such a political coalition to be formed and for a viable set of policies to be built around it, based both on political self-interest and policy credibility in a global economic setting.

The paper begins by outlining the main assumptions and propositions of NSE and how they contrast with existing economic orthodoxies. It then identifies a range of political interests which could in principle support a NSE-inspired policy program. The next section discusses some philosophical, policy and political weaknesses of the neo-Schumpeterian approach from a more traditional social democratic perspective. Nevertheless, the paper concludes that, in light of the apparently terminal demise of Keynesianism at least at the national level, NSE may offer social democratic parties and other progressive forces the prospect of establishing a coherent and credible economic policy stance in opposition

to neo-classical economic orthodoxy, which at the same time stands a reasonable chance of winning substantial political support.

Neo-Schumpeterian Economics: Principal Features

Schumpeter and the Economics of 'Creative Destruction'

Schumpeter's main concern as an economist was the process of capitalist growth and development (Schumpeter, 1934). Neo-classical economics, as a theory of equilibrium, did not really have a theory of economic growth, or of innovation and technical change. Schumpeter, by contrast, saw these as the central elements of the capitalist system and the main challenge for economic theory to explain. There is not space in this paper for a detailed analysis or description of Schumpeter's economic theory. However, several key ideas which derive from his work have helped form the basic assumptions and principles underlying neo-Schumpeterian economics and are important for our purposes here (see Freeman, 1994, for a detailed analysis).

Perhaps the most significant of these ideas was Schumpeter's recognition of the crucial role which innovation (often, but not always, the product of scientific and technological advance) played in economic growth and the development of capitalism. Innovation - in products, processes, work organisation, finance and markets - enabled entrepreneurs to secure monopoly profits, at least temporarily. The search for such profits was the main cause of the process of 'creative destruction' which Schumpeter saw as endemic to capitalism. Creative destruction - the replacement of products and processes (and their owners) by other, invariably superior products and techniques - propelled capitalist growth, primarily through the imitation and diffusion of innovations and through the efforts of entrepreneurs to improve on them in order to secure a share of the newly created or altered market. Competition was crucial to the process, but it was competition between entrepreneurs aiming at securing monopoly profits (or a share of them), not competition in the neo-classical sense of perfectly competitive markets. Indeed, Schumpeter argued in *Capitalism, Socialism and Democracy* that innovation was increasingly focussed in oligopolistic markets which enabled large firms to earn sufficient profits

to invest in R&D and market development and thereby 'routinise' innovation, at least to some extent (Schumpeter, 1942: 132-134). This was the source of his fear that capitalism could be 'socialised' (through the nationalisation of large firms), but he maintained that the innovative process would continue even under a 'socialist' system (Medearis, 1997).

The Influence of Neo-Schumpeterian Economics

Despite his renown as an economist, Schumpeter's work was overshadowed by Keynes and the revolution in macro-economic policy which the latter inspired after World War II. However, as Keynesianism hit stormy waters in the 1970s, and as the importance of technology and innovation to economic growth became clearer, interest in Schumpeter's ideas came back into vogue. This was also assisted by the inability of neo-classical economics to explain economic growth and by its lack of a theory of technology. Solow's famous work on economic growth in the 1950s had demonstrated the importance of technology to economic growth, but to all intents and purposes technology was a 'black box' to neo-classical economics (Rosenberg, 1982). Its effects could be modelled through comparative statics, but the process by which technology and innovation was generated was assumed to be exogenous to the system. Subsequently, a new school of economic thought - often referred to as evolutionary economics - has developed, building on Schumpeter's insights, and especially the crucial role of innovation and technical change. This has been greatly assisted by developments in statistics which provide much greater data on research, development and the innovative activities of firms and countries than had previously been available.

There is now a burgeoning literature based around the Schumpeterian tradition (for a comprehensive overview, see Freeman, 1994) and strong academic groups have formed in the UK, the Netherlands, Scandinavia, California and Italy. Perhaps more significantly, the OECD's Science, Technology and Industry (STI) division has become a regular sponsor of NSE-based work (e.g., OECD, 1997), while the European Commission commissioned an important report dealing with the information society

by a 'High Level Group of Experts' which was chaired by Luc Soete, one of the most prolific neo-Schumpeterian authors (EC, 1996).

In Australia, the influence of NSE has been less noticeable, as neo-classical orthodoxy has generally ruled both academic and bureaucratic economic analysis. However, there has been a shift in recent years. Academically, there have been an increasing number of scholars working in the NSE tradition (e.g., Dodgson, 1996; Johnston, 1996; Marceau, 1996; Phillimore, 1995; Sheehan *et al*, 1995; and the journal *Prometheus*). At a bureaucratic level, the Science and Technology Policy Branch of the Department of Industry, Science and Resources (and its predecessors) is most clearly identified with the NSE approach (DIST, 1995; DISR, 1998). But even the Industry Commission, a stalwart of 'economic rationalism', has drawn heavily on neo-Schumpeterian authors and concepts in its analysis (although not in its policy recommendations) of R&D in Australia (IC, 1995).

A significant recent development was the publication in late 1997 of a report, *The High Road or the Low Road? Alternatives for Australia's Future*, sponsored by the Australian Business Foundation (ABF), an employers' association based in Sydney (Marceau *et al*, 1997). This report contained a comprehensive review of NSE literature and applied its main concepts to the Australian situation. The group responsible for the report has subsequently been commissioned to conduct further work for DISR.

Neo-Schumpeterian Economics: Innovation and Learning

So what are the key principles of a neo-Schumpeterian economic approach? The first thing to note is that NSE builds on, but does not blindly follow, Schumpeter's insights. For example, there is a long-standing debate within NSE about Schumpeter's view that large firms and oligopolistic markets are more conducive to innovation than small firms and highly competitive markets. Schumpeter also focused mainly on radical innovation, and had less to say about incremental innovation and the important role which the diffusion of innovation plays in generating economic growth. Furthermore, and significantly in the

context of this paper, it is probably fair to say that most authors writing in the NSE tradition, at least in Europe and Australia, write from a social democratic perspective in contrast to Schumpeter's own conservative political outlook.

In view of the 'explosion of research papers in the innovation literature' (DIST, 1995: 1), it is not possible to give a comprehensive account of NSE (for summaries, see Dodgson and Rothwell, 1994; Dosi *et al*, 1988; Edquist, 1997; Freeman and Soete, 1998; Lundvall, 1992; Nelson, 1993), but the main features can be summarised here:

- innovation is *the* dominant factor in economic growth and patterns of world trade' (DIST, 1995: 1, original emphasis);
- innovation is best understood as a system, in which innovative firms operate 'in the context of the institutions, government policies, competitors, suppliers, customers, value systems, and social and cultural practices which determine their opportunities' (DIST, 1995: 1). These systemic features constitute the 'selection environment' in which firms find themselves and evolve (Marceau *et al*, 1997: ES.5);
- 'understanding the linkages among the actors involved in innovation is the key to improving technological performance' (OECD, 1997: 9). In fact, the linkages and flows within the system are as important as the actors themselves;
- innovation often occurs in clusters rather than in 'lone' firms, and involves much more than producers. For example, the role of large and demanding users is crucial in many clusters - retailers for the clothing industry, hospitals for the scientific equipment industry, etc. (Porter, 1990; Marceau, 1996);
- national systems of innovation are extremely significant, despite globalisation, since it is national institutions, values and culture which govern the behaviour of many of the actors and the quality and extent of linkages between them (DIST, 1995; Edquist, 1997; Marceau *et al*, 1997; OECD, 1997);
- the institutional basis of the innovation system means that its functioning 'is limited by past practices and existing industrial structures' (Marceau *et al*, 1997: ES.5). In other words, innovation is

to a large extent path-dependent, both at the firm and the national level[1];

- as a result of path dependence, 'countries specialise technologically and seem not to converge as much as has often been thought' (Marceau *et al*, 1997: ES.5);
- in the current economic and technological environment, knowledge is becoming a crucial factor of production (Johnston, 1996). Accessing and using knowledge in commercially successful ways requires the development of 'complementary assets' such as management skills, marketing and distribution channels, manufacturing facilities, good labour relations, etc. in order to fully exploit the knowledge gained (Marceau *et al*, 1997: ES.6);
- firms and countries tend to respond to changing patterns of world demand either through technology/innovation development or through wage and exchange rate adjustments (Marceau *et al*, 1997: ES.6).

The policy implications of NSE are many, varied and not as clearly discerned as in neo-classical economics, at least partly because the institutional and historical approach which NSE adopts necessarily means that policy preferences will be determined to a large extent by the specific circumstances and histories of the companies, industries and countries concerned. There is no one policy which can fit all circumstances, in contrast to the situation in neo-classical economics where general rules are often applied. Furthermore, it should be borne in mind that given the systemic understanding of innovation which NSE has, it is not just innovation policy that counts in promoting innovation. Indeed, in the discussion about political possibilities below, several other areas of policy are examined which are only indirectly concerned with innovation, but for which an innovation-driven policy regime is possible. For now, we can list some broad principles which NSE would generally endorse in terms of innovation policy itself:

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1 As Boyer (1993, p. 99) points out, the neo-Schumpeterian emphasis on path dependence has close affinities with earlier post-Keynesian work on increasing returns to scale and the notion of cumulative causation in trade and growth, ideas primarily associated with the Cambridge economist Nicholas Kaldor.

- a technology/innovation-driven response to changing world demand is more important in high knowledge industries and is correlated with high wages and employment growth, while a response based on exchange rate and wage flexibility dominates lower-tech goods and services and is associated with lower wages and reduced employment growth. The former path represents 'the high road', the latter 'the low road', to economic development. But getting onto the high road is not an easy task, especially given the importance of historical and institutional factors to innovative performance. Therefore, 'unless strategic policies are implemented to shift the direction of development', existing specialisation patterns are likely to continue - which may consign Australia to a lower growth and income path (Marceau *et al*, 1997: ES.5);
- policy needs to be more sensitive to the idiosyncratic needs of firms and sectors (Dodgson and Bessant, 1996). This is especially important in less populous countries, such as Australia, where some sectors are dominated by a very small number of companies (Marceau *et al*, 1997: ES.9);
- the importance of learning, knowledge flows, industry clusters etc. means that 'the key function of a national system of innovation is to promote learning by its constituent economic actors' (Marceau *et al*, 1997: ES.5). This requires innovation policy to focus on clusters and sectors rather than individual companies, and to promote linkages between actors, including an important role for intermediaries and consultants in promoting innovation (Dodgson and Bessant, 1996);
- the focus on learning means it is vital to maintain diversity and general competencies within the system (in education, research and industry structure, for example), and there is an accompanying need to avoid over-emphasising the benefits of 'efficiency' at the expense of flexibility. From this perspective, the presence of 'redundant' capacities (of skills, for example) can actually be quite productive (Streeck, 1991);
- improving firms' innovative capabilities is a crucial policy aim. This may also involve addressing resource deficiencies within companies, often through active intervention and support mechanisms rather

than relying on companies to take the initiative themselves (Dodgson and Bessant, 1996).

Returning to the debate about the 'third way', it is possible to distinguish NSE from both Keynesian and neo-classical economics. NSE has many affinities with Keynesianism on macro-economic issues, and recognises the importance in particular of expansive macro-economic settings in achieving growth and reducing unemployment. But an NSE approach would argue that Keynesians have neglected the supply side of the economy (Streeck, 1991), and that it is the quality of the innovation system which determines to a large extent the response of the supply side (i.e., companies) to particular investment and fiscal stimuli. For NSE, not all forms of investment and consumption are equal; some provide greater learning opportunities and spillover benefits than others.

Similarly, NSE agrees with neo-classical economics on some issues, for example, the need generally to promote competition and free trade (e.g., Porter, 1990). But it differs on many issues too, or provides an alternative rationale for adopting or judging policy, even if the end result is sometimes the same. So for example, both approaches would accept that there is a case for government to support R&D, but NSE does so not simply because of the existence of a static notion of 'market failure' (the neo-classical rationale), but also because of the importance of R&D to learning capabilities more generally. In essence, the heuristic or 'rule of thumb' which would govern NSE in policy terms is that of learning and innovation, rather than the neo-classical emphasis on correcting market failure and promoting market-defined efficiency.

An example of the way in which NSE differentiates itself from both Keynesian and neo-classical economic policies is to be found in the recent industry policy debate in Australia (Phillimore, 1998). In late 1997, several reports were published, whose main policy prescription was the need to provide significant funds ($1 billion over 5 years) from government as an incentive to attract international investment into Australia (EIU, 1997; Goldsworthy, 1997; Mortimer, 1997). The Federal Government's response to this suggestion has so far been fairly muted in terms of actual resource commitments (Commonwealth of Australia, 1997).

It appears from this debate that a new dividing line is emerging in Australian industry policy; the protagonists are now those prepared to concede the need for a basic set of generic support programs for R&D, export promotion, etc. (e.g., Treasury, Finance, and most mainstream economic commentators) and those (mainly from industry) who wish to add the need to attract investment from overseas through tax concessions, grants, subsidies, etc. as a way of showing that Australia 'is open for business' (Mortimer, 1997: 52).

But from a NSE perspective, it can be argued that there is actually little to choose between the two groups: both rely on 'sound' macroeconomic policy, competitive microeconomic settings (including industrial relations 'reform') and lower input costs as the most important keys to economic growth and industry development. There is little evidence in these reports to suggest that government needs to think about the way in which Australian industry is structured, either in terms of the balance between sectors or within sectors, or where growth is going to come from, exactly. By contrast, the NSE-based report for the ABF discussed above (Marceau *et al*, 1997) has broadened the industry policy debate beyond the current obsession with microeconomic reform, cost reductions and attracting footloose capital by offering the lowest costs, without simply harking back to previous 'old Left' support for tariffs or sectoral support policies. Agnosticism about industry structure is no longer good enough; governments must actively strive to shift the economy towards greater knowledge and innovation intensity. Policy proposals in the ABF report therefore included measures aimed at encouraging business and industry networks, promoting R&D, building global marketing and distribution channels for local industry, investing heavily in public infrastructure, etc.

A Neo-Schumpeterian Political Coalition?

As is well known, Schumpeter was an avowed conservative and his later political writing was at least partly dedicated to devising a means of retaining elite control over the democratic political process (Medearis, 1997). Nevertheless, he himself freely acknowledged his intellectual debt to Marx, and there have been several analyses of the intellectual links

between the two men, especially their views on technology and its crucial role in the dynamics of capitalist development (e.g., Rosenberg, 1986). Indeed, one commentator has gone so far as to label Schumpeter a 'bourgeois Marxist', i.e., as someone with a similar analytical approach to Marx but who was committed to a different class (Catephores, 1994).

In light of Schumpeter's debts to Marx, therefore, it is perhaps not so surprising to observe that NSE provides opportunities for progressive or Left politics in several areas, many of which are not directly related to innovation policy *per se*. However, as noted above, NSE views innovation as a *systemic* process, and therefore involves many institutions and actors which may have an indirect impact on the innovative capacity of the economic system and society as a whole. In these circumstances, we might argue that an NSE-inspired policy regime will focus on promoting innovation and learning as an additional or replacement rationale in many policy areas, just as neo-classical economics has promoted competition and market-based rationality in recent years. The crucial difference is that an innovation-based labour market or environment policy has much greater progressive possibilities, in policy and political terms, than does a neo-classical policy heuristic.

Labour

An innovation-driven economic policy has several potential advantages for workers, and in particular for trade unions, one of the traditional support bases of social democratic parties. In contrast to the familiar nostrums of neo-classical economists about 'labour market reform', NSE is concerned that 'policies aiming at a greater degree of labour market flexibility may be successful in the short run, but harmful to innovation and economic performance in the longer run'. This could occur because 'attempts at removing labour market rigidities are likely to discourage productivity growth and product innovation. In turn, reduced innovation efforts will have a negative impact on employment and company profits' (Kleinknecht, 1998: 388).

Drawing on the experience of the Netherlands, Kleinknecht (1998: 393) argues that wage moderation creates a threefold problem from a neo-Schumpeterian perspective:

- it lowers the rate of labour productivity growth due to an ageing of the capital stock (since labour is now relatively cheaper, capital replacement is delayed) which in turn slows income growth and reduces the economy's technological capacity;
- reduced (and in particular, differential) wages interfere with the proper workings of the process of 'creative destruction' by allowing less efficient firms to compete successfully through means of lower wages rather than innovation, which in the long run lowers the average quality of entrepreneurship in the economy; and
- lower wages reduce the size of effective demand which discourages product innovation, particularly for smaller firms.

In addition, 'flexible' industrial relations - such as a decline in collective wage bargaining, reduced protection for employees against dismissal, greater managerial prerogatives at the workplace, etc. - have a similar effect: they 'give an extra competitive option to non-innovating firms' and as a result 'innovating firms have less chance to out-compete them' (Kleinknecht, 1998: 394). The end result is a vicious cycle in which deregulation, work intensification and wage moderation lead to lower incomes and less jobs which in turn leads to demands for more wage moderation, greater managerial control and labour flexibility. Unions hold the key to breaking the cycle, according to Kleinknecht: '[a]ll they need to do is make higher wage claims' (Kleinknecht, 1998: 394). In much the same fashion, Streeck (1991) has argued that unions are potentially the most important actors in pushing the production system towards an innovation-driven, high-quality, high-skill, high-wages regime through their influence on wages, industrial relations and - most significantly - vocational education and training policies[2].

2 For a summary of this argument applied to Australia, see Phillimore (1997).

Environment

A similar concern with non-innovative competition can be found among neo-Schumpeterians in relation to environmental regulation. Several authors (e.g., Banks and Heaton, 1995; Porter and van den Linde, 1995; Kleinknecht, 1998), have argued that tougher environmental standards can create innovative advantages for companies and countries alike. For companies, tough standards prevent firms from undercutting each other via a 'race to the bottom' in environmental performance; more innovative solutions are then required for environmental problems, and there is a greater incentive for companies to invest in risky R&D to achieve them.

For countries, there is the prospect of achieving 'first mover advantage' in particular industry sectors as a result of tougher environmental regulations (in low-emission vehicles, for example). The ABF's *High Road or the Low Road* report, for example, noted the vulnerability of Australia's economic structure from an environmental policy angle. Almost 20% of Australia's exports are fossil-fuel based, which could be under threat if the international community begins to take serious action against global warming (Marceau *et al*, 1997: 10.46-47). Yet Australia's position at the Kyoto conference in late 1997 was to successfully seek special dispensation from international greenhouse gas reduction targets. Its 'success' can be seen from an NSE perspective as a short-term victory which is likely to have deleterious long-term consequences, not just for the environment but also for Australia's innovative capacity and for its prospects of competing in the growing global markets for environmentally-based products and services (see Hamilton, 1998 for a discussion of Australian policy at Kyoto).

Thus, NSE offers green activists and sympathisers - a growing segment of the population, especially among younger voters - with important economic reasons for supporting tougher environmental policies. In addition, there is growing analytical support among green theorists about the superiority of NSE over neo-classical (i.e., environmental economics) approaches to sustainability issues (Jacobs, 1997).

Education, Training and Research

Education and training, and research and development (R&D), are acknowledged areas of 'market failure' in neo-classical economics; as such, government intervention to promote such activities is generally supported. Nevertheless, there are differences even here between neo-classical orthodoxy and NSE which suggest that the latter provides a surer avenue of support to interests concerned with public education, training and research - again, groups traditionally associated with the political Left.

On schools, neo-Schumpeterians are convinced of the importance of a sound general and technical education for all students, since they believe that information flows and innovation are promoted by having competent people at all levels of the production process. In that sense, they oppose a strongly differentiated education system which caters primarily to an elite rather than providing a good basic educational grounding for all students. The difference between the German and British systems is often highlighted in this regard (Patel and Pavitt, 1994).

Similarly, the vocational education and training system should ensure that as many workers as possible receive appropriate training. Labour market structures are important here; too great an emphasis on 'external flexibility' - in particular, the ease with which employers can hire and fire workers - reduces the incentive for companies and workers to invest in training. Labour relations are also relevant; fear of being dismissed and a lack of workplace trust will reduce the willingness of workers to fully involve themselves in the production process, thus reducing the learning and innovative possibilities at this level. Thus, legislation against unfair dismissals and promotion of industrial democracy - particularly at the workplace level - are important elements of an NSE approach, since they reduce the attractiveness of the 'low road' option of competing on price alone, and force companies to treat their employees more like 'fixed costs' which require investment (through training, technology and progressive human resource management) to be fully productive (Kleinknecht, 1998).

At the tertiary level, NSE is not agnostic about the educational choices of students and is loathe to leave them solely or mainly to market forces.

Certain fields of research and education - in particular engineering and some scientific disciplines - have an extremely important role within the national system of innovation in terms of enabling countries to generate and absorb technological advances (Marceau *et al*, 1997), and therefore the future supply of people educated in these subjects cannot be left solely to the changing preferences of students as expressed, for example, through a voucher system. Even less can they be actively discouraged through a user-pays system such as Australia's differential HECS, which makes science and engineering degrees more expensive relative to general arts degrees and hence a less attractive option for students. Planning and active support for these study options are required from government to ensure that society has a basic competence in key areas of science and technology.

NSE regards research as crucial to learning and knowledge acquisition, and therefore expenditure on R&D is likely to be supported. More than that, however, NSE regards basic research as an extremely important part of the innovation system, not just for its direct part in generating new ideas but also for its role in providing new graduates and skills which transfer into and are available for use by companies and other research performers (Pavitt, 1991). Unlike neo-classical approaches which increasingly argue that research spending needs to be targeted in selected areas and made more 'market relevant', NSE argues that it is important for a country to maintain a basic level of competency in a range of research disciplines and skills, and for diversity to flourish. The NSE approach also acknowledges the importance of public sector research agencies (such as CSIRO) to the innovation system, and is reluctant to break them up or cut them too severely, especially if the private sector is not taking up the challenge (Ewer, 1995). This is particularly important in less populous and more isolated countries such as Australia, where the private sector's industry and research fabric is relatively 'thin' and where the public sector provides a strong core of skills and expertise (Marceau, 1996). However, NSE is aware of the importance of developing networks between the different players in the research system and encourages collaborative R&D between companies and between industry, universities and public sector research agencies.

The Regions

One of the lessons derived from the national system of innovation approach of NSE is that proximity matters. Information flows and networking activity are more likely to occur within national borders than outside them. Most multinationals still maintain a strong domestic base for their most critical innovative activities (Patel and Pavitt, 1994).

By the same token, several writers from the NSE tradition have argued that the importance of geographical location for individual companies has economic and policy implications at the city and regional level. Regional clusters of innovative firms in particular industries have been identified in a number of studies; the innovative nature of the sectors stems at least partly from the dense communication and other networks which have formed, often between ostensible competitors (Castells and Hall, 1994; Piore and Sabel, 1984).

Thus, NSE offers the potential for the identification and development of regional industry clusters and policies to assist in the process. Again, there is political potential in such an approach, as declining regions and industries can be offered assistance to chart out a new future based-on existing capabilities being exploited in new directions, rather than being at the mercy of one or two major employers in cost-based industries such as clothing or steel.

Industry

Some industry groups are likely to find encouragement from NSE. Most obviously, the importance of small and medium-sized firms in the innovation process is emphasised, although more often through more active management improvement and technology transfer and acquisition programs rather than simply through reductions in tax or 'red tape'.

Certain industry sectors and large companies tend to receive special attention, given their importance as demanding customers, and as centres of learning and information flows. NSE does not regard the loss of key sectors and companies with equanimity or see it as the inevitable outcome of market forces. Retaining a significant industry capability in

certain sectors (especially those with large knowledge and skill spillover effects) is crucial to the innovative performance of the whole economy. This does not mean that NSE invariably advocates rescue packages for poorly managed firms, or for each and every industry sector. But it does mean that policy will treat each sector individually, rather than being applied across the board. This is even more necessary in Australia, where many industry sectors are dominated by just a few companies (Marceau *et al*, 1997). Manufacturing and capital goods industries are given particular attention because of their role as knowledge transmitters and as sources of innovative capacity; similarly, infrastructural industries such as telecommunications require special attention, given their reach across the whole economy.

The Public Sector

As is clear from the above discussion, the state has several very important roles to play in NSE. Not all of them require the expenditure of large amounts of funds, but the state is definitely not a 'nightwatchman', as in the neo-classical ideal. Unlike the rhetoric of the new right, public service is not decried in NSE, but is an integral part of the system of innovation. Some of the more important tasks which the state must carry out under a NSE framework include:

- establishing strong regulatory standards for labour relations, products, environmental performance, etc., in order to promote 'virtuous' rather than 'vicious' competition between firms (Kleinknecht, 1998);
- maintaining strong public sector research agencies with a clear understanding of the industries to which they are linked (Ewer, 1995; Marceau *et al* 1997);
- using public expenditure to boost innovation. At the macro level, Freeman and Soete (1994) have argued that solving unemployment requires a combination of Keynes (boosting aggregate demand through increased investment) and Schumpeter (targeting such investment in key new technologies such as information and communication technology, biotechnology and renewable energy).

At the micro level, an NSE approach would involve using public procurement policy to promote and encourage innovation (e.g., by setting tough standards), and developing industry capabilities (e.g., the provision of electronic payment systems which induces companies to invest in electronic commerce);

- providing access to information and technology for companies and encouraging networking and sharing among companies;
- investing heavily in education, training and research; and
- easing the transition from declining industries to growing industries through appropriate retraining programs.

Problematic Issues Raised by Neo-Schumpeterian Economics

While the above discussion indicates the policy and political potential of NSE, it must be acknowledged that there are a number of potential philosophical, policy and political problems too, especially when viewed from a progressive, social democratic perspective.

Philosophical Problems

From a radical Left perspective, NSE appears unashamedly reformist. It does not attempt to mount a fundamental challenge to capitalist productive relations, nor does it contain within it the seeds of transition towards a socialised system of public investment, as was the original intention of the Swedish wage-earners' funds, for example (Korpi, 1978). NSE starts and ends with the dynamics of capitalist growth, but attempts to harness them more effectively by using collective policy instruments and actors and by setting a relatively high social and economic floor to the competitive processes inherent in the system, thus imparting a more progressive character to it[3].

3 It might be said that writers in the NSE tradition have added a social democratic and Keynesian dimension to the thoroughly bourgeois Schumpeter, rather than

the competitive processes inherent in the system, thus imparting a more progressive character to it[3].

From a green perspective, it can be argued that 'global Schumpeter dynamics' will exacerbate rather than alleviate the problems of unsustainable resource exploitation, as efforts to increase the efficiency of resource use may only result in absolute increases in resource consumption through renewed economic growth (Krupp, 1995). Others however, while accepting this prognosis to some extent, argue that *radical* innovation *à la* Schumpeter is therefore even more necessary if resource constraints are to be overcome while still maintaining equity and improving living standards for all (Freeman, 1992).

Policy Problems

It is important to remember that, although innovation is crucial to economic growth and improved living standards, it is not sufficient. Macro-economic policies equally have a major influence on economic outcomes: consistently high interest rates, low rates of investment, overly restrictive fiscal policies, etc. can undermine even the best efforts of an innovation-driven economic policy (Marceau *et al*, 1997: ES.7).

By the same token, NSE does not pay equal attention to policy areas which have an impact on innovation. For example, it is relatively silent on specific policy suggestions about the financial sector, despite that sector's obvious (and acknowledged) influence on innovation (and on macroeconomic outcomes, as recent events in East Asia clearly testify). NSE's primary focus is instead on production and, relatedly, the 'quality' of consumption in the form of demanding users. It notes the existence of different types of financial systems (notably those based on banks and

3 It might be said that writers in the NSE tradition have added a social democratic and Keynesian dimension to the thoroughly bourgeois Schumpeter, rather than adding a (neo) Schumpeterian emphasis to the more radical Marx. Nevertheless, NSE's insights can be a useful starting point for understanding capitalism and for devising strategies for challenging it (e.g., see the critique by Hodgson (1998) of recent Marxist theorising on 'market socialism', which draws heavily on NSE arguments about the importance of tacit knowledge and learning).

tends to draw from the existence of these disparate systems is the extreme difficulty of changing such long-standing practices and institutions (Soskice, 1994).

The existence of path dependence, both of institutions affecting innovation (such as the finance sector) and of the innovation process itself within firms and industries, makes policy success particularly elusive. 'Changing course' from a natural resource-based economy which has traditionally competed on the basis of lower costs (through wage and exchange rate adjustments) is not easily achieved. While NSE is useful in showing the potential for change, it is also sobering in its recognition of the constraints facing governments which choose to go down the innovation-led path.

Perhaps the biggest problem for a 'third way' policy based around NSE, however, is the potential of the state to implement it. This problem has at least three dimensions: first, can the state win sufficient political support to raise the taxes and apply the regulations required under NSE policy prescriptions; second, are there sufficient numbers of businesses willing and able to support an industry development strategy along the lines suggested; and third, is the state competent enough to be able to adopt sensitive and effective neo-Schumpeterian policies in areas such as industry and the environment?

This latter problem of state competence and capacity is probably the most significant, for NSE implies an active and aware bureaucracy, which is knowledgeable about the innovation system and its constituent elements. Unlike neo-classical approaches, which tend to assume a 'one size fits all' policy approach in most cases, the NSE approach demands that public servants 'get their hands dirty' and delve into the detail of industries and companies (Marceau, 1996). This, however, carries political risks surrounding the idea of 'picking winners' and highlights the need for new forms of public sector training, recruitment and accountability.

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which in turn impels firms to focus on radical product innovations which promise high rates of return. For a fuller discussion, see Soskice (1994) and Tylecote (1994).

Political Problems

A neo-Schumpeterian world is not a restful one. For electorates uneasy with the pace of change and wishing to return to old certainties, NSE offers little respite. The process of 'creative destruction' means that some firms will go bankrupt, fortunes will be won and lost, and job losses will occur. The prospect of perpetual innovation and change is not necessarily a comforting one for many people. In addition, it does not turn its back on economic globalisation, the need for competition, etc.

The crucial question here is how the costs and benefits of change and transition are worked out. In a neo-classical world, almost all the costs are borne by the losers - the unemployed in particular. A neo-Schumpeterian approach tries to ease the transition by equipping potential and actual losers with the skills and resources required to compete in future. It also actively tries to reduce the total number of losers by following a strategy aimed at boosting aggregate demand and good jobs.

A further important criticism of the politics of NSE has been made by Jessop (1993). He warns about the prospect of a 'Schumpeterian workfare state' replacing the more traditional Keynesian welfare state in the face of the relentless pressure on companies and governments to compete and improve their productivity. The danger here is that welfare provision may attempt to equip people for the labour market by applying 'sticks' rather than 'carrots' through, for example, cutbacks in welfare payment eligibility and an increasing emphasis on active but low quality labour market participation as a condition for receiving income support. Furthermore, many people are left out of this equation - for example, those who are marginal to or excluded from the labour market, such as carers, disabled people, the aged and infirm, etc. What role does a neo-Schumpeterian approach envisage for these people - traditionally, an important part of the social democratic constituency? The short answer may well be - not much.

However, this could be too negative a view. First, from a purely economic perspective, the traditional Keynesian arguments for welfare payments in order to maintain aggregate demand still hold in NSE. Second, as noted above, high levels of unemployment put downward

pressure on the innovative performance of the economy by increasing the temptation for firms to go down the 'low road' to competitiveness by using cheap labour to soak up the 'reserve army of unemployed'. To combat these pressures, there is an incentive within NSE for governments to improve job security and increase the reward to work through high wages. Third, there is increasing recognition of the importance of trust and social capital in building a more innovative and competitive society (Fukuyama, 1995). Too much inequality and social exclusion leads to inefficient, less innovative firms and, at a societal level, a maldistribution of investment in order to address the problems of crime, poverty, etc. Finally, assuming that the taxation resources are available, there is nothing in NSE which prevents it from being coupled to more Keynesian, 'third sector' employment policies; on the contrary, if public sector-funded jobs can be directed to areas directly linked to the diffusion of new technologies, so much the better for the innovative capacity of the economy in particular and the society as a whole (EC, 1996; Freeman and Soete, 1994).

Conclusion: Neo-Schumpeterian Economics and the 'Third Way'

The argument of this paper is not that neo-Schumpeterian economics is a panacea in either policy or political terms. However, it does appear to have the virtue of establishing an underlying policy framework centred around support for innovation which also provides arguments for related policy positions in areas which many on the Left hold dear - support for unions and collective bargaining, tougher environmental protection, a larger role for education and the public sector, regional and industry programs, etc. In doing so, it contains the seeds of a viable political constitutency which can attract support from the traditional Left as well as reaching out to other groups such as environmentalists, innovative companies and people involved in the 'knowledge economy'. Moreover, it argues for these positions from an economic perspective which has strong evidence that such policies are more likely to promote innovation and competitiveness than current policies based on a neo-classical economic approach.

Yet NSE is not mutually exclusive. It can complement Keynesian policies at national and international levels, if the political support can be mustered for a return to Keynesianism. At the same time, it can complement elements of a neo-classical approach, including competition and trade policy and the promotion of an active government role in education, training and research. In that sense, it can be truly be said to be a 'third way' in economic policy which holds out promising political possibilities.

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