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Centre of Full Employment and Equity

Addressing demand deficient unemployment:
The Job Guarantee

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"Dare to be naïve"
R. Buckminster Fuller

1   Introduction

In this paper we outline a path to full employment and inflation control based on the Job Guarantee (JG) proposal by Mitchell (1998) and develop some new analysis of this option. We also contrast it with the wage-cutting approach proposed by the so-called Five Economists (for example, Dawkins, 1999). The context of the paper is clear. If the misery index (sum of the unemployment rate and inflation) is computed for most OECD countries, then it is higher than it was in 1960, when full employment was systematically achieved, and unemployment now makes a higher contribution (Mitchell, 1996). The data reflects the shifting emphasis of economic policy over the last 40 years. The "NAIRU era" since the 1970s has since been associated with deficient demand and persistent unemployment. The one indisputable fact is that the Australian economy (like most) has failed to generate enough employment to match the number of available workers.

What is becoming increasingly apparent is that the supply-side strategy pursued for many years has not been successful in reducing unemployment. The major shifts in unemployment are still dominated by shifts in aggregate demand (see Mitchell, 2001b). The major reason why unemployment has remained high for so long is that the economy has never reversed the rapid rise that occurred during the 1974 recession. The battery of supply-side measures (training, harsher work tests, and the like) has failed to break the inverse link between the business cycle and long-term unemployment (Chapman *et al*, 1992, Mitchell, 2000b) There is also compelling evidence that unemployment rates in most OECD countries have become increasingly persistent to negative shocks (Mitchell, 1993, 2001a). The market does not appear able to resolve this. There is a prima facie case for intervention to attenuate the costs of these negative shocks in the face of such persistence. Mitchell (2000c) has shown that a major explanation for the persistent unemployment over the last 25 years lies in the failure of the public sector to maintain their share of employment. Private sectors in most countries do not provide enough employment to meet the growth in the labour force. A compounding factor has been the

misuse of monetary policy, which has led investment ratios to fall (Ball, 1999; Mitchell, 1996, 2001c). In this context, Mitchell and Watts (1997), Watts and Mitchell (2000) have computed the costs of unemployment and compared them to estimates of microeconomic costs arising from alleged inefficiencies. The macro costs dwarf the micro costs. Finally, one of the co-founders of the NAIRU terminology, Franco Modigliani has recently presented evidence for Europe, which emphatically shows that unemployment is an outcome of demand-deficiency driven by inappropriate monetary policy from central banks obsessed with achieving low inflation (Modigliani, 2000). The result of more than 15 years of supply-side reforms is clear to see. Unemployment has persisted at high levels, there is increased underemployment (Mitchell and Carlson, 2000), and persistent GDP gaps are evident (Mitchell, 2001b). We thus reject a NAIRU approach to stabilising the price level. It neither provides a basis for sustainable price stability nor a sustained low unemployment rate.[2]

In seeking a solution to the persistently high unemployment we identify several issues. First, we take the primacy of the private sector as given and avoid questions about fundamental changes to the mode of production. We outline a strategy within this paradigm, to improve the fortunes of the unemployed. Second, we believe that there are asymmetries in the inflation-unemployment relationship that renders a deflationary strategy self-defeating and costly. The 1990s shows that persistently high unemployment will eventually control inflation and expunge inflationary expectations. But how does the economy then support higher levels of demand again without reigniting inflationary pressures? There were no answers to this question in the standard monetarist literature. The modern neo-liberal approach is more sophisticated and uses unemployment as a vehicle not only to expunge current wage pressures but also to make their reemergence more difficult. Labour market deregulation also aims to reduce union power and provide decreased incentives to workers to eke out an existence on welfare payments. Industry policy has also been targetted at deregulation and increased competition. The problem is that none of these policies generate sufficient demand to return to full employment.

In this paper we compare two approaches to reducing unemployment: (a) The Job Guarantee approach advocated by Mitchell (1998), and (b) The relative wage cutting approach attributed to the Five Economists (FE) (for example, Dawkins 1999). The approaches capture in many ways the main divide among economists concerning the scope and nature of interventionist policy. They both recognise that the market alone will not deliver full employment. However, the FE approach sees the problem as being largely on the supply side and assumes the demand side will accommodate. In this sense it is a modern version of the classical wage cutting approach, with some equity insurance being provided by the state and Say's Law ensuring all the demand issues can be assumed away. The JG traces unemployment to deficient aggregate demand (Mitchell, 1996, 1998, 2001c). However, it does not consider that traditional Keynesian remedies are suitable with inflationary biases and environmental concerns paramount. Under the JG the public sector resumes the role it played in the post-WWII period of full employment as an *employer of the last resort*, ready to absorb the flux and uncertainty of the private capitalist production system.

The paper is set out as follows: Section 2 outlines the basic features of the JG policy and provides more detailed analysis of the inflation control mechanisms and the interaction between the JG and individual incentives to work. It is shown that the JG does not reduce incentives to work. Given that there is considerable doubt among academic, financial economists and the policy makers who take their advice, about the viability of budget deficits, Section 3 focuses on this issue. We examine the two arguments arising from the Government Budget Constraint literature concerning the consequences of financing by money issue and debt-issue. We argue that the orthodox findings are misconstrued in a fiat currency economy and trace this misconception to a failure to incorporate bank reserve changes into the analysis. Section 4 presents results of simulations of the JG policy in a tailored version of the CofFEE-1 macroeconometric model. The simulations, though tentative, show that the JG provides broad benefits to the Australian economy. Section 5 analyses the argument of the Five Economists in relation to our central theme that unemployment arises due to demand deficiency. We argue that the proposal of the FE would generate full employment with price stability. Concluding remarks follow.

2   The Job Guarantee Policy

2.1   Basic outline of the Job Guarantee

The JG can be summarised by the following features. Some of the issues arising from the JG are explored below:

1. **Full Employment:** The public sector operates a buffer stock of jobs to absorb workers who are unable to find employment in the private sector. The pool expands (declines) when private sector activity declines (expands). The economies that avoided the plunge into high unemployment in the last 25 years maintained a "sector of the economy which effectively functions as an employer of the last resort, which absorbs the shocks which occur from time to time..." (Ormerod, 1994: 203). The JG fulfills this absorption function to minimise the costs associated with the flux of the economy.

2. **JG Wage:** To avoid disturbing private sector wage structure and to ensure the JG is consistent with stable inflation, the JG wage rate is best set at the minimum wage level. The JG wage may be set higher to facilitate an industry policy function.

3. **Social Wage:** The state supplements the JG earnings with a wide range of social wage expenditures, including adequate levels of public education, health, child care, and access to legal aid. Further, the JG policy does not replace conventional use of fiscal policy to achieve social and economic outcomes. In general, we prefer a higher level of public sector spending.

4. **Family Income Supplements:** The JG is not based on family-units. Anyone above the legal working age is entitled to receive the benefits of the scheme. We would supplement the JG wage with benefits reflecting family structure. In contrast to workfare there will not be pressure applied to single parents to seek employment.

5. **Inflation control:** The JG maintains full employment with inflation control. When the level of private sector activity is such that wage-price pressures forms as the precursor to an inflationary episode, the government manipulates fiscal and monetary policy settings (preferably fiscal policy) to reduce the level of private sector demand. The resulting rise in JG employment indicates the degree of private sector slack that is necessary to resolve the distributional struggle over current real income. Incomes

policy may be complementary to reduce the JG employment level consistent, at any point in time, with inflation control if desired.

6. **NAIBER:** The ratio of JG employment to total employment is called the Buffer Employment Ratio (BER). The ratio that results in stable inflation via the redistribution of workers from the inflating private sector to the fixed price JG sector is called the Non-Accelerating-Inflation-Buffer Employment Ratio (NAIBER). It is a full employment steady state JG level, which is dependent on a range of factors including the path of the economy. Its microeconomic foundations bear no resemblance to those underpinning the neoclassical NAIRU.

7. **Workfare:** The JG is not a more elaborate form of Workfare. Workfare does not provide secure employment with conditions consistent with norms established in the community with respect to non-wage benefits and the like. Workfare does not ensure stable living incomes are provided to the workers. Workfare is a program, where the State extracts a contribution from the unemployed for their welfare payments. The State, however, takes no responsibility for the failure of the economy to generate enough jobs. In the JG, the state assumes this responsibility and pays workers award conditions for their work.

8. **Unemployment benefits:** We would abandon the unemployment benefits scheme (see below) and free the associated administrative infrastructure for JG operations. The concept of mutual obligation from the workers' side would become straightforward because the receipt of income by the unemployed worker would be conditional on taking a JG job.

9. **Administration:** For financial reasons explained below, the JG would be financed federally with the operational focus being local. Local Government would be an important administrative sphere for the actual operation of the scheme. We would abandon the Jobs Network and restore the Commonwealth Employment Service (CES), which would play and important role in coordinating the JG demand and supply with local level managers. Local administration and coordination would ensure meaningful, value-adding work was a feature of the JG activities.

10. **Type of Jobs:** Surveys of local governments in the past have revealed a myriad of community based projects that could be completed if Federal funds were

forthcoming. The JG workers would contribute in many socially useful activities including urban renewal projects and other environmental and construction schemes (reforestation, sand dune stabilisation, river valley erosion control, and the like), personal assistance to pensioners, and other community schemes. For example, creative artists could contribute to public education as peripatetic performers. The buffer stock of labour would however be a fluctuating work force (as private sector activity ebbed and flowed). The design of the jobs and functions would have to reflect this. Projects or functions requiring critical mass might face difficulties as the private sector expanded, and it would not be sensible to use only JG employees in functions considered essential. Thus in the creation of JG employment, it can be expected that the stock of standard public sector jobs, which is identified with conventional Keynesian fiscal policy, would expand, reflecting the political decision that these were essential activities.

11. **Open Economy Impacts:** Mitchell (1998, 2000a) has analysed the consequence for the open economy of the introduction and maintenance of a Job Guarantee policy. The JG requires a flexible exchange rate to be effective. A once-off increase in import spending is likely to occur as JG workers have higher disposable incomes. The impact would be modest. We would expect any depreciation in the exchange rate to improve the contribution of net exports to local employment, given estimates of import and export elasticities found in the literature (Dwyer and Kent, 1993; Bullock, Grenville and Heenan, 1993). Mitchell (2000a) has formally tested and rejected various claims that the financial markets would react adversely to the initial expansion of the budget deficit. We examine this argument in more detail in a later section.

12. **Environmental benefits:** The JG proposal will assist in changing the composition of final output towards environmentally sustainable activities. These are unlikely to be produced by traditional private sector firms because they have heavy public good components. They are ideal targets for public sector initiative. Future labour market policy must consider the environmental risk-factors associated with economic growth. Possible threshold effects and imprecise data covering the life-cycle characteristics of natural capital suggest a risk-averse attitude is wise (Zarsky, 1996: 172). Indiscriminate (Keynesian) expansion fails in this regard because it does not address

the requirements for risk aversion. It is not increased demand *per se* that is necessary but increased demand in certain areas of activity.

2.2   Inflation control mechanisms

Mitchell (1998, 2000a) has outlined in detail the inflation control mechanisms in the JG and compared them to the NAIRU approach. We summarise the arguments briefly here. Inflation is defined to be a continuous increase in the price level brought about by a struggle over real income between domestic and external claimants. There are two considerations:

1. The price pressures upon introduction of the JG
2. The changes to the inflation-sensitivity of the economy over a normal business cycle.

In a TV-NAIRU economy, rising demand will increase output and employment and a range of wage-wage (relativity) and wage-price (distributional struggle) forces as the product market softens can lead to acceleration in price inflation. In response, the government represses demand. The higher unemployment brings the real income expectations of workers and firms into line with the available real income and the inflation stabilises. If hysteresis operates, the subsequent contraction may be less severe than if hysteresis is absent.

These dynamics are very different under a JG model. Initially, the JG sets a wage floor for the economy and provides jobs for the existing unemployed (plus hidden unemployed). There are no relative wage effects and the rising demand *per se* does not necessarily invoke inflationary pressures because firms are likely to increase capacity utilisation to meet the higher sales volumes. Given that the demand impulse is less than required in the TV-NAIRU economy, it is clear that if there were any inflation it would be lower under the JG. There are no new problems faced by employers who wish to hire labor to meet the higher sales levels. The rise in demand will stimulate induced private sector employment growth. We show in the next section that no incentives on the supply side are distorted by the JG introduction.

Will these demand pressures ultimately lead to accelerating inflation? While the JG policy, frees wage bargaining from the general threat of unemployment, two factors offset this. First, in professional occupational markets, while any wait unemployment will discipline wage demands, the demand pressures may eventually exhaust this stock and wage-price pressures may develop. Second, while it is likely, given the probable labour intensive nature of JG employment, that the JG workers will have lower levels of productivity than their private sector counterparts, we consider the productivity to be embodied in the job rather than the worker. Private firms would still be required to train new workers in job-specific skills in the same way they would in a non-JG economy. However, JG workers are likely to have retained higher levels of skill than those who are forced to succumb to lengthy spells of unemployment. This changes the bargaining environment rather significantly. This reduces the hiring costs for firms in tight labor markets who previously would have lowered their hiring standards and provided on-the-job training and vestibule training. They can thus pay higher wages to attract workers or accept the lower costs that would ease the wage-price pressures. The JG policy thus reduces the "hysteretic inertia" embodied in the long-term unemployed and allows for a smoother private sector expansion because growth bottlenecks are reduced. It is worth noting that with high long-term unemployment, the excess supply of labour is not likely to not pose a very strong threat to wage bargaining anyway (Mitchell, 1987, 1998). We thus hypothesise that the threat factor under the JG is now higher.

We conclude that the JG policy introduces "loose full employment" because: (a) the demand pressures it invokes are less than if the unemployed were fully employed at market wages in the private sector, and (b) there is no disruption to the relative wage structure of the private sector. It is the *BER* that conditions the overall rate of wage demands. When the *BER* is high, real wage demands will be correspondingly lower. If inflation exceeded the government's announced target, policy rules are triggered to increase the BER (tighter fiscal policy settings). The change in the composition of employment results in workers being transferred from the inflating sector to the fixed price JG sector and ultimately this attenuates the inflation spiral. The BER at which this occurs is called the Non-Accelerating Inflation Buffer Employment Ratio (NAIBER). So

instead of unemployment being used to discipline the distributional struggle, the JG policy achieves it via compositional shifts in sectoral employment. Full employment is maintained.

Is the NAIBER a NAIRU in disguise? Paul Davidson has attacked the JG as a natural rate approach with a human face (PKT Discussion List Archives, June 2001). The superficial similarity is that there is a steady-state defining a given BER (and level of private employment) with stable inflation. However, once we dig into the microfoundations of the NAIBER outlined briefly above we see a totally different world than that described for a natural rate model following Friedman. Further, there is a strong assumption that the steady-state defined by the NAIBER is fragile, multiple and cyclically sensitive.

Is the NAIBER higher than the NAIRU? The question has its roots in the fact that a particular level of demand curbs the inflationary process in a NAIRU-world. Clearly, if we introduce a JG scheme, the initial level of JG employment will deliver a higher demand level than inherited under the NAIRU economy. Why is this not inflationary given it ostensibly disturbs the balance set by the NAIRU? The answer is addressed above and relates to the fact that the JG creates loose full employment. The JG workers comprise a credible threat to the current private sector employees because they represent a fixed-price stock of skilled labour from which employers can recruit. In an inflationary episode, business is more likely to resist wage demands from its existing workforce because it can achieve cost control. In this way, longer term planning with cost control is achievable. So in this sense, the inflation restraint exerted via the NAIBER is likely to be more effective than using a NAIRU strategy.

2.3   Incentives and the Job Guarantee

What is the nature of the interaction between the JG and the welfare system in terms of providing appropriate incentives on the supply side? To highlight the results, we take a neo-classical approach to this problem. We compare the JG to an unemployment option (with and without the unemployment benefit) and to private sector employment. Figure 1 shows the work-leisure choice facing an individual. The unemployment benefit is OA.

The private sector reservation wage is W_p and the JG wage is W_j. The individual is currently unemployed due to demand deficiency in the private sector and is located at A on IC_1. If a private job were available at the current private wage, the individual would be at his/her point of indifference between working at wage W_p and remaining on the unemployment benefit. Any slight rise in the private wage will induce the individual to enter employment. Assuming that the private wage was that for the low-skill worker, any attempts to cut it would have ramifications for the inducement to work.

Figure 1 Comparing work choices and incentives

Hours of work
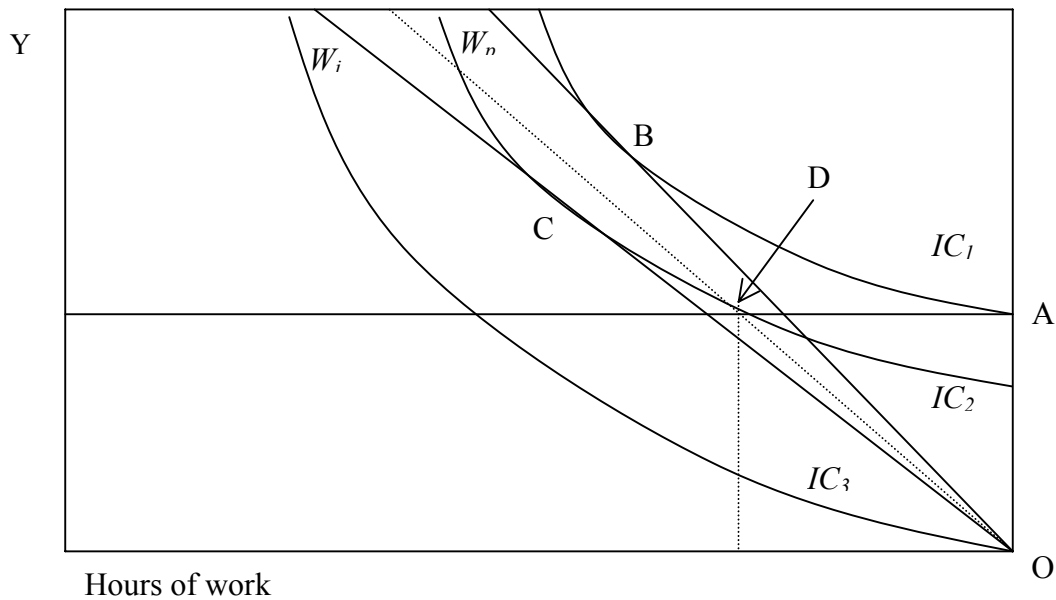
In the JG approach, the worker is faced with a choice between no income at O or a JG job (should they be unable to find a private sector job) at W_j. It is clear, that the worker will prefer the JG job (at C) in this case but they would not prefer it if they could take the unemployment benefit as an alternative. This worker would also prefer a private sector job to the JG at the indifference wage should one become available. So the JG does not interfere with preferences motivating a worker to take a private sector job. It does not provide disincentives to work. It is only not preferred if there is guaranteed non-work income of a sufficient level. This is not a surprising result but justifies the policy mix of guaranteed employment without corresponding unemployment benefit support being available.

The JG approach is a safer full employment strategy than a wage cutting approach. In the wage cutting approach unemployment benefit payments must be abandoned or not indexed over time in order to avoid the disincentive effect. However, this approach, at face value relies on questionable assumptions about elasticities and lack of interdependence between wage income and spending to generate its job growth projections. The JG policy provides certainty in two dimensions: (a) guaranteed employment, (b) guaranteed income. The wage cutting methodology provides certainty in neither.

We also modelled the choice between the JG and Workfare via a simulation approach. We made the standard constrained utility maximisation tractable by using a Cobb-Douglas preference function and then examined the conditions that would be required to render the JG a preferable choice in the face of Workfare (a full derivation of our model appears in Appendix A). We conclude that under extremely plausible conditions, that the will be preferable to an individual than Workfare.[3]

3   The cost of the JG, budget deficits and financial markets

3.1   What does it cost?

The critics of the JG approach point to financial constraints that they allege would arise from the higher budget deficits. The willingness of government to allow the budget deficit to increase and decrease as is necessary to maintain full employment is essential to the viability of the JG policy. In this section, it is argued that the rising budget deficits that are likely to accompany the introduction of the JG policy are not a cost and should be ignored. Watts and Mitchell (2000, 2001a) have provided detailed estimates of the JG program to achieve 2 per cent unemployment. Their work includes estimates of the direct costs, automatic stabilisation effects (increased taxes and the reduction in unemployment benefits), and the savings associated with a reduction of labour market programs. All other discretionary government expenditures on items such as health, education and the police are left unchanged. Using figures for the last quarter of 1999, they conclude that

the net budgetary costs lie between $5.5 and $6.4 billion depending on assumptions made about the labour market behaviour of Disability Support recipients. They note that in 1996 State and Territory Governments spent almost $6b on corporate welfare in the form of subsidies and foregone revenue (Baragwanath and Howe, 2000). Thus the achievement of full employment is a political choice and should be largely unconstrained by preconceived ideas about the size of deficits.

There are still conceptual issues concerning budget deficits that are controversial. The NAIRU era has been marked, in part, by a vigorous pursuit of budget surpluses. Wray (1999) provides an excellent account of the destructive consequences of this policy. But in this section, we carefully deconstruct the financial arguments to show where the negative connotations of budget deficits fail to meet the test of logic and empirical scrutiny.

A popular textbook (Viney, 2000: 337-340) opens the section on government borrowing as follows:

> Changes in budget outcomes affect interest rates, exchange rates, and the flow of funds within the markets, as government demand for debt funding fluctuates. When the government deficit is high, the government demand for debt funding will 'crowd out' private sector borrowers and limit growth within the business sector.

We will argue that this statement, which is representative of the orthodox approach and underpins the NAIRU obsession, is flawed at its most basic level.

Figure 2 using Australian quarterly data for the period 1970-2000, plots the Commonwealth budget deficit against inflation, the 10-year Treasury bond rate, the nominal AUD/USD exchange rate and the current account balance. All have been implicated by orthodox analysis as being adversely affected by budget deficits. The graphs show no systematic relationships exist. Mitchell (2000a) has examined the financial consequences of budget deficits in a formal econometric model and concluded that none of the principal claims used against fiscal activism are empirically sustainable. In Figure 3, there is no systematic relationship shown between the growth in M1 and

inflation, but a positive relationship between the growth in M1 and the growth in real GDP. So at first blush, the case against budget deficits and monetary growth is difficult to see.
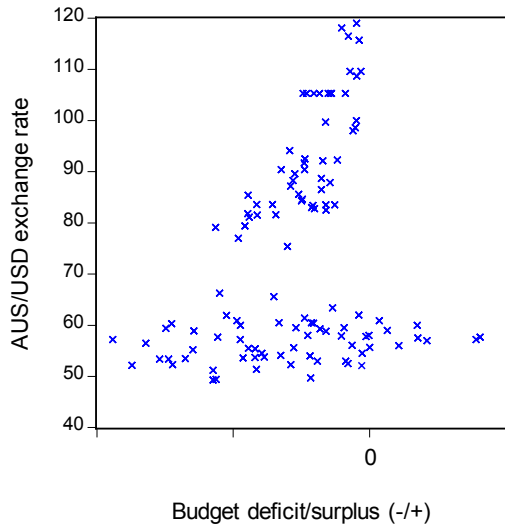
Figure 2 Relationships between budget balance and selected financial aggregates
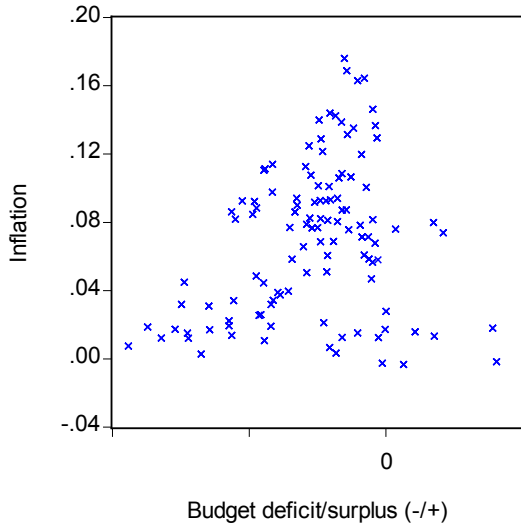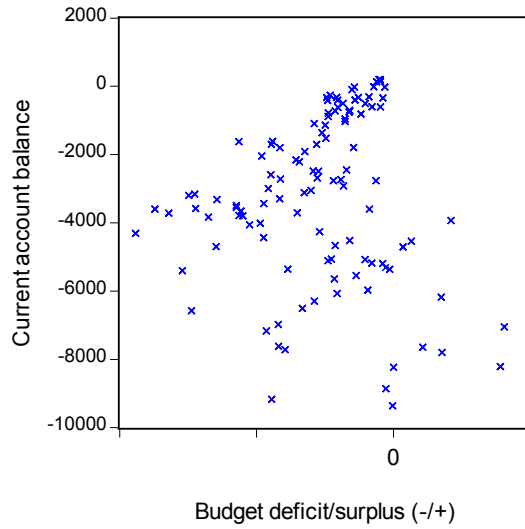

(a) Budget balance and the inflation rate
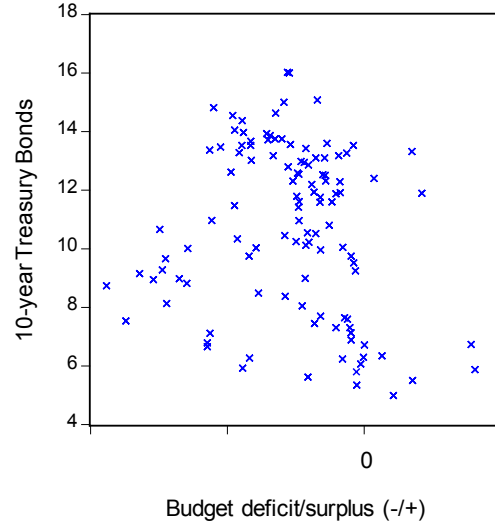
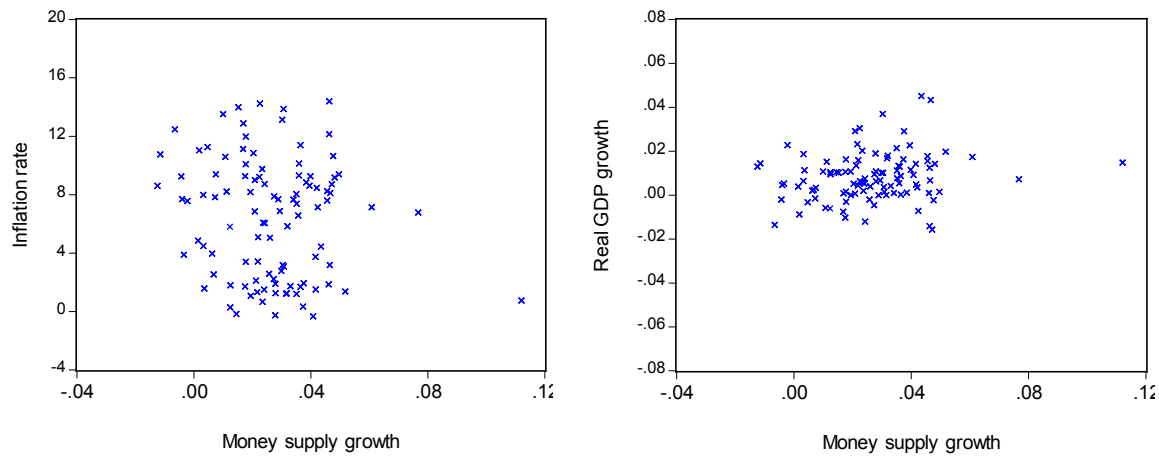(b) Budget balance and 10-year bond rate

(c) Budget balance - USD exchange rate

(d) Budget balance and Current Account

Source: ABS AUSSTATS and Reserve Bank Database.

Figure 3 Relationship between monetary growth and inflation and real output, Australia

| (a) Money Supply Growth and Inflation | (b) Money supply and real output growth |

Source: See Figure 2. Money growth is the quarterly percentage change in the M1 measure. Inflation is the quarterly percentage change in the GDP deflator.

3.2   The flawed analogy

One of the most damaging analogies in economics is the supposed equivalence between the household budget and the government budget. For example, Barro (1993: 367) says, "we can think of the government's saving and dissaving just as we thought of households' saving and dissaving." However, the analogy is flawed when we are discussing a fiat currency system. The household must work out its sources of financing before it can spend. The government is totally the opposite. It spends first and never has to worry about financing. The important difference is that the government spending is desired by the private sector because it brings with it the resources (fiat money), which the private sector requires to fulfill its legal taxation obligations. The household cannot impose any such obligations. The government has to spend to provide the money to the private sector to pay its taxes, to allow the private sector to save, and to maintain transaction balances.

The logic according to those who draw the household analogy follows like this. Debt would have to be issued to finance the deficit. Accordingly, bond sales finance government, which will accumulate as debt. Like a household, the rising debt cannot be sustained indefinitely and so spending must be curbed and brought in line with the

financial reality. In the meantime, the demands that the debt places on available savings pushes interest rates up and crowds out "more efficient" sources of private spending. Even many economists who are sympathetic to reducing unemployment via government spending are constrained by this view. For example, Glyn (1997: 226-227) says spending is constrained by the requirements that the debt to GDP ratio is stable but recommends against deficits *per se* because "financial markets, the ultimate arbiters of such matters, may look simply at the size of the deficit ... There seems little alternative to financing through taxation most of an expansionary programme." The BIS (1995: 88) concur, "it is difficult to persuade markets that low inflation is sustainable in the presence of large budget deficits."

3.3   The Government Budget Constraint

To substantiate this concern, economists invoke the government budget constraint (GBC), which considers three forms of finance:

1. Raising taxes,
2. Selling interest-bearing government debt to the private sector (bonds), and
3. Issuing non-interest bearing high powered money (money creation).

The GBC refers to the constraints on the government that spends more or less than taxation revenue (Ott and Ott, 1965; Christ, 1968). The GBC can be expressed to set the conditions for a stable debt ratio (Bipsham, 1997):[4]

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = (r-g)\frac{B_{t-1}}{Y_{t-1}} + \frac{(G_t - T_t)}{Y_t} - \frac{\Delta H_t}{Y_t}$$

where G is total government spending, T is total taxation revenue, B is the stock of government debt, r is the real interest rate, and H is the issue of high powered money.

Various scenarios can then be constructed to show that deficits are ultimately inflationary (if financed by high-powered money) or squeeze private sector spending (if financed by debt issue). In terms of the so-called financing options, orthodox analysis eschews the use

of high powered money increases (termed in their framework, debt monetisation) because they invoke classical neutrality to argue that it is sooner or later, inflationary (for example, Blanchard, 1997). There are two flaws in this argument: (a) the link between monetary growth and inflation is not well established, and (b) the concept of debt monetisation is an inaccurate depiction of high powered money issue. We examine each argument in turn.

3.4   Money and inflation

The conclusion that monetary growth causes inflation is a replay of the neutrality argument embedded in the Quantity Theory of Money and its more recent restatement by Friedman (1956). The following circular analysis is provided. Whenever, the government "prints money" it can exchange it for goods and services from the private sector. The real goods and services it extracts are called *seignorage* and if we assume the rate of real output growth is zero, then the truism that high powered money growth is directly reflected in the inflation rate is clear. Seignorage becomes an inflation tax imposed on the private sector by the government.

With velocity of circulation assumed constant the *ex post* accounting relationship $\Delta H/H = \Delta P/P + \Delta Y/Y$ is unobjectionable. In other words, an increase in high powered money, reflected in higher nominal demand would be split into price and real output changes, according to the nature of aggregate supply and where the economy is at the point of the expansion. The behavioural analysis then examines the nature of aggregate supply. The QTM assumes this away by concluding that the economy is already operating at full capacity and at that point the aggregate supply curve has to be vertical. Hence the demand expansion is swamped by nominal changes – leading to inflation if the expansion is maintained. But this conclusion evades the real question – why does the economy persist at levels of activity that are empirically well below the full employment level? In this economy, the nature of the supply response is crucial. The economy constrained by deficient demand (defined as demand below the full employment level) can respond to a nominal impulse by expanding real output.

But the problems with orthodox analysis go deeper than this. The analysis ignores the impact of the government spending on bank reserves. Once considered, these impacts generate strikingly different conclusions.

3.5   Reserve Accounting – why debt monetisation is problematic

Deficits/surpluses between the public sector and the private sector (more/less government outflows than inflows) have major implications for what is termed "system wide liquidity" and promote changes in the reserves in the financial system. To understand the implications of this we need to briefly review the operation of the payments system and the role the central bank plays within it.

The Reserve Bank of Australia (RBA) trades Commonwealth Government Securities (CGS) and repos with members of the Reserve Bank Information and Transfer System (RITS) on a daily basis in the short-term money market in order to manage the supply of cash that is available to the commercial banking system. In addition to managing liquidity, the RBA also pursues its monetary policy intentions in the short-term money market by maintaining its desired level of short-term interest rates.

The commercial banks (and some other selected financial institutions) maintain exchange settlement accounts (ES accounts) with the RBA to allow the settlement of the multitude of financial transactions within the financial system. The operation of the payments and settlement process is outlined in RBA (1996). The principle is essentially the same irrespective of the transaction being classified by the RBA as high-value or low-value, cash or non-cash. There are obviously nuances concerning the different types of classifications but the substance of the argument is unaffected. For example, the high-value transactions are now handled by the Real Time Gross Settlement (RTGS) system to ensure no major defaults occur. The low-value transactions are settled on a net deferred basis the morning after the transactions pass through the payments system.

Exchanges between ES accounts in settlement sum to zero in terms of the system wide balance and so in net terms the money market cash position is unchanged. These are

horizontal relationships (Wray, 1999). The situation is very different when the transaction is between the Commonwealth government and the private sector (so-called vertical relationships). The system balance can be changed by Commonwealth government budget position changes, official foreign exchange transactions (RBA intervention purchases and sales), and net open market sales of Commonwealth government debt. Government spending adds liquidity and taxation drains it. In terms of open market operations by the RBA, sales of Commonwealth government debt drain liquidity and purchases add liquidity. These effects are influencing the cash position of the system on a daily basis and on any one day they can result in a system surplus (deficit) due to the outflow of funds from the official sector being above (below) the funds inflow to the official sector. The system cash position has crucial implications for the monetary policy operations of the RBA, which targets the level of short-term interest rates. The Domestic Markets Department of the RBA "has the task of maintaining conditions in the money market so as to keep the cash rate at or near an operating target decided by the Board. The cash rate is the rate charged on overnight loans between financial intermediaries. (RBA, 2001a)" In terms of the RBAs monetary policy objectives, if it desires to maintain a particular cash rate, it will indicate to the market that it will trade CGS (sell when there is a system-surplus, buy in a system-deficit). This provides the banks with an ability to get "same-day funds" and avoid end-of-the-day dealings with the RBA or other banks, which would be on less than desirable terms. So the system balance is an important determinant of the use of OMO by the RBA. How does this help us to understand the relationship between budget deficits and the sale of CGS?

On any one day, it is unlikely that the ESA adjustments to match the transactions between the Commonwealth government and the private sector will net to zero. For example, if the system is in deficit (net value flowing to the official sector), the overall level of the ES accounts will fall. This raises the possibility that overall, the ES accounts could be in deficit with the system requiring cash for balance or the short-term rates in the money market will start to rise. In this case, there are several options. The RBA could conduct OMOs and buy CGS from the banks to defend the target rate. But in lieu of this, the deficit banks have to seek cash elsewhere to fulfill their obligations to the RBA to run

credit-balance ES accounts. There is a further complication in that ES account settlements have to be made using same-day funds (cash that bypasses the payments system). There are only four sources available to a bank: (a) own-ES accounts surpluses, (b) other bank-ES account surpluses, (c) RBA payments for OMO purchases, and (d) repos. Given that each member of the clearing system is required to clear settlement funds (same-day funds) daily, there is active trading in the Interbank market for these funds. Banks may prefer to purchase same-day funds in the Interbank market rather than incur the penalties associated with repos.

The RBA pays the commercial banks that have surplus ES accounts a default return equal to 25 basis points less than the overnight cash rate. This acts as a disincentive to keep these accounts in surplus. A bank has to trade-off the lack of investment yield with the potential costs of running into deficit and having to borrow from surplus banks or enter repurchase agreements with the RBA. The problem for banks is that they cannot use sales of CGS on the secondary market as same day funds because these transactions have to pass through the payments system. Further, the net cash position of the system is unchanged by this and so it does not solve a system wide surplus (or deficit). In other words, the banks must transact with the RBA in the ways noted above.

What are the implications of these operations where the government is running a fiscal deficit? The fiscal deficit, after all the spending and depositing is done, results in a system-wide surplus. The commercial banks will be faced with earning the default return on the surplus ES funds rather than a commercial rate. This will put downwards pressure on the cash rate. If the RBA desires to maintain the current stated cash rate then it has to drain this surplus liquidity from the system. It does this by selling government debt. So the role of government debt is not to finance spending but to maintain reserve balances such that a particular cash rate can be defended by the central bank.

Once we accept this logic then it follows that "debt monetisation" is a non sequitur. Once the cash rate target is set, the RBA will only trade CGS if the liquidity changes are required to support this target. Given the RBA cannot really control the reserves then debt

monetisation is strictly impossible. Imagine that the RBA traded CGS with the Treasury, which then increased government spending. The excess reserves would force the RBA to sell the same amount of CGS to the private market or allow the cash rate to fall to the support level. This is not "monetisation".

3.6   Implications

1. Deficit spending without bond sales would leave excess reserves in the banking system, so that government debt helps to maintain the spread between the overnight cash rate and the default rate paid by the central bank on excess ES reserves. If the Treasury offers too few or too many bonds relative to the holders of reserve balances at the Central Bank, the Central Bank "offsets" those operations to balance the system. In any case, the "money" is in one account or another at the Central Bank. Spending does not require that debt be issued.

2. The idea of financial crowding out in this environment is meaningless. Deficits add to the net disposable income of households in the economy and the income provides markets for private production. An endogenous credit economy then serves to provide the deposits necessary to make payments, which facilitate production.

3. Once this analysis is understood the question arises as to why any long-term government paper is issued. It is not required to finance spending and is unnecessary as a vehicle for reserve maintenance operations outlined above. Second, the RBA could stop paying the support level for the excess reserves, refrain from issuing any debt with the consequence that the interbank rate would fall to zero. This is exactly the situation that the Bank of Japan has allowed to occur in Japan.

4. It may be argued that the analysis is flawed because of central bank autonomy. If the central bank was truly autonomous and constrained the government by refusing to create high powered money (honour the Treasury cheques) then the government is constrained. This raises the interesting issue of central bank independence. In general, we argue that the electorate should periodically sanction all policy at the ballot box. The idea of a central bank, which can impose harsh monetary policy, without political scrutiny is anathema to this desire. This is the topic of further research.

4 Simulating a business cycle under the Job Guarantee

In this section we briefly present evidence drawn from Centre of Full Employment and Equity modelling of the likely effects of the introduction of the JG in the Australian economy. The simulations are based on the CofFEE-1 macroeconometric model, which is in developmental stage. The part of the model used in the simulation, comprised an expenditure system (consumption, investment, exports, imports and government expenditure functions), an employment requirements function (mapping non-JG employment as a function of output), and a Phillips curve (where inflation is a function of the output gap and import prices). There were additional functions inserted to capture the JG introduction. We added a government inflation reaction, which reduced autonomous government spending by 2 per cent for each percentage point that the inflation exceeded the target inflation rate of 3 per cent. We assume that in each quarter, the JG workforce is a residual, 98 per cent of the labour force minus employment.

The simulation was performed over the 1990:1 to 2000: 4 period (just over a complete business cycle). Monetary policy is assumed unchanged from the actual policy over the 1990:1-2000:4 period. All exogenous variables (including world growth) are assumed to take their actual paths over the period shown. We assume the exchange rate takes the actual values over the period. The shock was introduced via the government spending function. The revised spending is the sum of the actual spending over the period plus the JG wage bill less the impact of the inflation reaction function outlined above. The JG workers in this simulation are paid 75 per cent of the average labour productivity (a wage of $10.49 per hour in 1991:1 finishing at $12.86 in 2000:4). This is an approximation used for the purposes of the simulation. Benefits to the unemployed were withdrawn at 1990:1 and the government spending adjusted accordingly. We emphasis that the results are tentative and a more refined version using the more complete CofFEE-1 model and tighter specifications of the JG introduction will be presented in Mitchell and Watts (2001). We believe, however, that the results are indicative of the general improvements in economic functioning and suggest that the system does not become unstable with the JG. Figure 4 (at end of the paper) shows the results of the dynamic simulation for key

variables: GDP, consumption, the budget deficit, net exports, the JG pool, and inflation. The actual values over the estimation period are shown along with the divergences in the post 1990:1 period.

Several summary points can be made from the results shown in Figure 4:

1. The role as an enhanced automatic stabiliser is shown. The demand consequences of the 1991 recession are severely altered with commensurate attenuation of the cyclical effects on inflation and net exports.

2. The introduction of the JG stimulates GDP and consumption and investment. The capital stock is higher at the end of the period under the JG than was actually recorded.

3. The Budget Deficit initially reaches a peak of $7.4 billion (1992:1) as the government absorbs all the JG workers. By the end of the decade with significant growth increases in the economy overall reaches a value of $634 million. The actual budget surplus in 2000:4 was around $2 billion.

4. The inflation declines steadily over the decade and by 2000:4 is slightly lower than actual. The slow decline relative to actual is attributable to the elimination of the 1991 recession. Net exports is also below the actual values by the end of the period with the recession impacts in the early 1990s eliminated.

5. The JG series steadily falls over the period. The stimulate growth more quickly eats into a smaller stock buildup and by the end of the period we estimate that 223.4 thousand remain in the JG pool compared to 638 thousand actual unemployed. The extra 415 thousand jobs are in the non-JG pool. We assume these are in the private sector because no additional government outlays have been given to the model.

6. The simulations emphasise a feature of the JG that can be overlooked – that is provides increased wealth-generation and employment in the private sector of the economy. So the JG provides would likely benefit both the unemployed and the firms in the private sector.

7. There is no suggestion in the simulations across a range of sensitivity tests (not shown) that the system becomes unstable. Essentially, the results are in accord with our intuition.

Figure 4 Introducing the JG into the Australian Economy – Simulated outcomes.
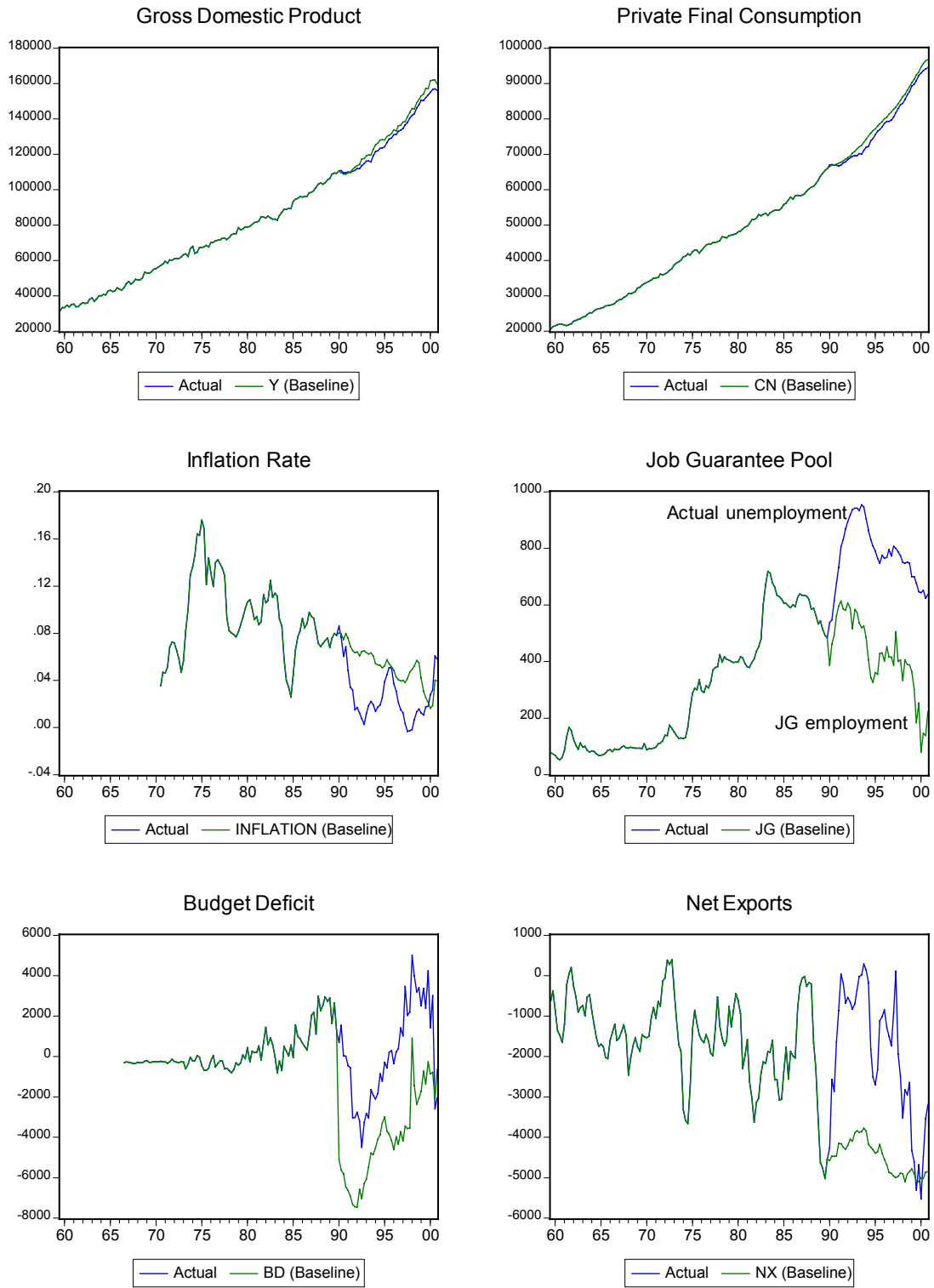
The actual series is shown up until 1990:1 (unemployment in the case of JG) and then the darker line traces the evolution of the actual data over the 1990s. The lighter line post 1990:1 is the simulated results from the model solution. The JG replaces the unemployment series after 1990:1.

5 Current state and alternative proposals

5.1 Introduction

In this section we focus on the wage-tax tradeoff advocated by the FE, which is the most articulate of the current alternative policies in Australia (see, for example, Dawkins *et al*, 1998a,b, Dawkins, 1999). Table 3 provides a summary comparison of the JG and FE proposals. The FE proposals are summarised below. We shall focus on the first two.

- The replacement of Living Wage adjustments with tax credits for low wage earners in low income families, so that effective marginal tax rates are reduced these families;

- A long term commitment to further reduce effective marginal tax rates by moving to a negative income tax system;

- A systematic approach to labour market programs;

- Upgrading educational and training systems over the long term (Dawkins, 1999: 48).

Dawkins (1999) argues that the reduced rate of real wage growth from the freeze will promote faster employment growth and a reduction in unemployment.

5.2 Freeze on Living Wage Increases

After the Accord was abandoned, the wages system became increasing decentralised making the timing and size of wage increases less predictable. With the main source of award adjustment being through Safety Net Cases administered by the AIRC, award recipients already bear the brunt of wage restraint (Watts, 2001). Workers on awards typically earned lower mean wages than their counterparts on collective and individual registered and unregistered agreements in May 2000 (Carlson, Mitchell and Watts, 2001; see also ACIRRT, 2001, Figure 1.4: 8). Also since the 1997-98 decision employees who are reliant or largely reliant on the safety-net increases can expect no wage increase if they still receive over-award payments that are sufficient to absorb the increases.

Thus there a structural flaw in the current wages system with decentralised wage determination through enterprise bargaining being given legislative support, yet (over) award recipients are subject to institutional wage restraint. Dawkins (1999) proposes to further entrench this de facto incomes policy on the low paid by freezing the Safety Net

adjustments, thereby widening the wage distribution over time. By advocating selective wage moderation, rather than general wage restraint through intervention in enterprise bargaining, the FE have embraced by default the OECD argument that a dispersed wage distribution is a prerequisite for high employment.[5] The USA is usually given as the exemplar of a country with significant wage inequality and low unemployment.[6]

Watson (2001) argues that there is a systematic relationship between underemployment and wage inequality but the causal relationship runs from (under) employment to wage inequality. Watts (2000) argues that any association between wage inequality and unemployment will be mediated by a number of factors, including the stance of macroeconomic policy, the rate of de-industrialisation, technical change and the institutional framework, including the welfare system and wage fixing arrangements. He notes that there has been a long-term increase in wage inequality in Australia. It is not evident that a further increase is warranted. Hancock (1999) finds no relationship between labour market flexibility measured by wage dispersion and employment levels. In a cross-country study, Nickell and Bell (1996) find no convincing evidence of a systematic relationship between relative rates of unemployment of the unskilled and their relative wages.

Thus there is no convincing evidence at a macro level that a further widening of the wage distribution via the freeze on Safety Net increases is a pre-requisite for significant employment expansion. At the very least post-tax incomes would have to be restored by the operations of the tax credit scheme to sustain aggregate demand.

5.3   Elasticity of Demand

Dawkins *et al* (1988a) provide clear guidance as to how an increase in wage inequality is to be achieved. The FE employment proposal is a return to neoclassical marginal productivity strategies that failed to work in the Great Depression and fail to address the aggregate demand constraint. Even at face value, there are problems with their elasticity measures. Nevile (2001) says the FE anticipate that freezing awards will cut real wages by

Table 3 Comparison of the Job Guarantee and the Five Economists proposal.

Characteristic	Job Guarantee	Five Economists
Job Creation	Central to the policy, every worker unable to find a job in the private sector is automatically guaranteed a public sector job.	No jobs guaranteed. Employment growth is dependent on the private sector responding to relative wage reductions.
Inflation impacts	Explicit inflation control to ensure full employment is sustainable. Changes in employment composition maintain the price control.	No explicit inflation control mechanisms. No specific answer to wage-price pressures in the higher demand economy.
External Sector impacts	Exchange rate adjustment with Marshall-Lerner elasticities assumed.	No explicit statements about the effects of higher employment levels.
Interest rate impacts	Debt issues maintain returns on excess ES reserves. Low cash rate preferred. No long-term debt issues.	No explicit statements about the effects of higher employment levels.
Wage conditions	Minimum wage growing with average labour productivity and indexed	Real wage cuts for some of the lowest paid workers over several years.
Wage inequality	Decreased	Increased
Tax/benefit system	Simplified & removal of unemployment traps. Increased incentive to work.	Unemployment traps removed. More incentive to work via tax credits, but possibly deleterious to secondary income earners. Downward pressure on social welfare benefits.
Environmental aspects	Clear part of the proposal is to divert employment and output into green activities	None specified.
Equity?	Guaranteed job for all unemployed workers. Strong social wage supports in place	Unequal treatment of low-wage workers, particularly award-dependent workers in high income families.
Efficiency?	Static and dynamic via higher activity & growth of investment & productivity.	Subsidy to employers of low wage (award) workers. Growth of low wage jobs. (Less training & job instability of low paid).

3 or 4 per cent in total over 4 years and lower unemployment by 1-2 per cent are based.[7] Nevile (2001) disagrees in two respects: (a) their projections depend on a significant positive scale effect, which is not estimated by Debelle and Vickery (1998), in addition to a more modest substitution effect, and (b) the demand elasticity that the FE draw from Debelle and Vickery (1998) of –0.4 is too high relative to international evidence. Even if it is correct, Junankar (2000) argues that a 4 per cent cut in real wages will not cut unemployment by 1.6 percentage points due to the presence of hidden unemployment.

The crucial point is that the award wage freeze does not guarantee any jobs are created nor is a recipe for sustained employment growth. While it overcomes many of the problems of targeted wage subsidies (deadweight loss, employment displacement and monitoring) substitution remains a problem because the low-wage unskilled workers may well be substituted for higher wage more skilled workers (Junankar, 2000).

5.4   Tax Credits

The FE consider that part of the problem is that the unemployed do not have incentives to take jobs because effective marginal tax rates (EMTRs) are too high and welfare recipients are caught in a poverty trap (Dawkins, 1999; Keating and Lambert, 1998). They thus advocate policies that improve the supply responsiveness. As a first step towards a negative income tax financed by a flat tax of 45 per cent, Dawkins *et al* (1998a) suggest that a tax credit scheme be implemented. The FE see the tax credit scheme as a step towards an integration of the tax and welfare systems. Keating and Lambert (1998) advocate the consolidation of means tests for different forms of family benefit into one test to get rid of the high EMTR.

The tax credit scheme would provide an alternative form of assistance to low income families, as compared to wage increases. The tax credits would be linked to family income because many individuals on low incomes are considered to be members of high-income families (Richardson and Harding, 1999). Watson and Buchanan (2001) dispute this and show that the earnings of low-wage workers are not a supplement for well-off families.

Apps (2001) constructs the new tax schedule for a single income earner corresponding to the adoption of the ALP 1998 Family Tax Credit scheme[8]. The EMTRs are reduced below the phase out range of income and the single income earner family is better off up to the income level at which the tax credit is phased out. Using ABS Income Distribution Survey data for a sample of working families in 1997, Apps shows that the impact on secondary earners is even greater if tax rates are adjusted to achieve revenue neutrality and the top marginal rate is set at 36 per cent (Garnaut, 1999). Thus the program is a means of "funding an expansion of welfare support for families facing falling wages due to labour market reforms, by raising taxes on median wage families with both parents working" (Apps, 2001: 19). Drawing on work with Rees, Apps (2001: 24) also shows that reductions in labour supply and saving and hence aggregate output and economic growth are likely to result from the introduction of the new tax system (see also Ingles, 2001). Ingles (2001) notes that most recipients of the Earned Income Tax Credit in the USA take it as an end of year refund, because of the fear of overpayment with little effect on labour supply behaviour. Given the tendency of the ATO to levy penalties when taxpayers understate tax, a similar response to the introduction of tax credits by low-income workers is likely in Australia. Ingles (2001: 21) also argues that the potential for fraud is higher under a system of Tax Credits if the payments are significant (Ingles, 2001: 21). Cohabiting couples would try to be individually assessed. Resort to an individual basis for assessment would reduce the target efficiency of EITC and increase its cost.[9]

While it is possible that high EMTR deter labour supply, it should be emphasised that with an average unemployment to vacancy ratio of around 11 since 1975, supply constraints hardly explain the persistently high unemployment. Without job creation, any positive benefits from the tax credit scheme will be ineffective. The major doubt about the FE scheme is that it does not produce the quantity of employment necessary to restore full employment.

5.5   Efficiency

The FE proposal is also an implicit industry policy, which at first blush does not promote a desirable trends in industry structure. The award wage freeze and the tax credits scheme

provide a subsidy to low wage firms, who are employing (over)award labour. Workplace arrangements that sanction low wages enable inefficient firms to survive the competitive struggle, thereby frustrating the efficient allocation of resources (Watson, 2001). Such firms do not have the incentive to achieve increases in labour productivity, via high levels of investment, to accommodate growing real wages (Nevile, 2001). Mitchell (1996) has pointed to the key role of investment in the achievement of a high level of economic activity and employment. The consumers of the products of these firms also receive a subsidy.

In the JG, low wage firms have a strong incentive to restructure their activities to achieve higher productivity and pay higher wages. Palley (1998) has shown that periodic rises in minimum wages forces low wage firms to raise labour productivity through new investment, rather than competing on the basis of reducing wage levels. If properly implemented, statutory minimum wages reduce earnings inequality, ensure a fairer distribution of economy-wide productivity gains and build prosperity from the bottom up.

5.6   Equity

In addition to the efficiency problems, the FE proposal also creates anomalies and inequities. Currently employed low wage earners who also get a tax credit would be better off than from an award increase, along with those workers who secure employment due to the decline in the relative award wage. But since tax credits are linked to total family income some (over)award earners who are subject to the freeze will not be compensated through the tax credit scheme. Conversely some low-income earners who are subject to certified individual and collective agreements will be eligible for the tax credit without being subject to a wage freeze. Watson (2001: 25) also rejects the focus on family income but notes that families who depend on wage and salary income are still subject to income inequality despite offsetting tax and social security provisions.

5.7   The two main contradictions

The FE approach suggests a dual role for the Government. On the one hand, it should indirectly attempt to increase the growth of low wage employment through the wage

freeze (relying on market forces to provide additional low wage jobs). On the other hand, the Government also has to ameliorate the problem of low wages for some workers by tax credits. There are two major contradictions inherent in this specific approach.

1. Nevile (2001) estimates that if a tax credit scheme is devised to compensate for the impact of inflation on real post-tax earnings of all low income full-time and part-time wage earners in low income families, then the annual cost of tax credits is in the order of $3b-$7b, given an inflation rate of 2.5 per cent and assumptions about income and asset tests and the taper rate. Watts and Mitchell (2000) estimate that a JG program introduced at the end of 1999 would have cost about $6.4b and generated a guaranteed 2 per cent unemployment rate. Alternatively, if revenue neutrality is the objective then the need to impose higher marginal tax rates in the phase-out range of taxable income appears to be at odds with the desire to maintain a progressive system, but achieve lower rates. Secondary income earners suffer an increased tax burden (Apps, 2001). The FE are unclear as to who should suffer the burden of the reform of the tax system. In other words, it appears impossible to design a tax/social security system, incorporating tax credits, which compensate for the award wage freeze and is revenue neutral, without significantly increasing average tax rates, unless a significant increase in employment is achieved at wage levels that yield positive net income taxes. Consequently there are likely to be pressures for government to restrict expenditure on the social wage, for example, through reducing the growth of expenditure on health and education.

2. Second, the constant level of nominal wages for those workers on (over)awards at the bottom of the wage distribution over the next 3 or 4 years in the presence of the freeze must be juxtaposed against the continued indexation of social security benefits, such as pensions and sickness benefits. Unless tax credits are relatively generous at these low levels of nominal wages, there will be pressure to let social security benefits erode in real terms over time, by failing to index, as well as tightening the availability of social welfare, to remove emerging poverty traps (Watson, 1999: 13).

6   Conclusion

In this paper we have outlined the basic operations of the Job Guarantee proposal. We have shown that it generates full employment and contains integral mechanisms to simultaneously achieve inflation control. We have also shown that in a typical model of individual maximisation that the JG does not distort work incentives. We have demonstrated that the JG is a safer path to full employment, as compared to wage cutting methods, because the latter has to also abandon or significantly reduce unemployment benefit payments in order to avoid the disincentive effect. However, this approach, at face value relies on questionable assumptions about elasticities and lack of interdependence between wage income and spending to generate its job growth projections. The JG policy provides certainty in two dimensions: (a) guaranteed employment, (b) guaranteed income. The wage cutting methodology provides certainty in neither dimension. We have briefly examined the recent proposal by the Five Economists and conclude that it is a modern version of the classical wage cutting approach, with some equity insurance being provided by the state and Say's Law ensuring all the demand issues can be assumed away. It does not directly address demand deficiency.

The introduction of the JG would also allow a number of reforms to be made to the welfare system: (a) the scrapping of the unemployment benefits scheme; (b) the expansion of the social wage and family income supplements (as a precursor to a guaranteed minimum income); and (c) the abandonment of workfare.

Finally, we have decomposed the arguments against the use of budget deficits by focusing on the impacts on financial system liquidity. We concluded that deficit spending without bond sales would leave excess reserves in the banking system, so that government debt helps to maintain the spread between the overnight cash rate and the default rate paid by the central bank on excess ES reserves. Spending does not require that debt be issued. In this sense, there is no government budget constraint.

Appendix A Work incentives in the Job Guarantee and Workfare

Consider an individual with a well behaved utility function defined across income and leisure of the form $U = U(Y, H - E)$, where E is hours of employment, w is the hourly wage so that $Y = WE$ is weekly income. H denotes the hours available during the week for paid work and leisure. Both first derivatives of the utility function are positive and the second derivatives are negative.

Then the individual maximises $U(WE, H - E)$. The first order conditions are given by $WU_1 - U_2 = 0$, which allows us to get $U_1 / U_2 = 1/W$. The second order condition can be written as $W^2 U_{11} - 2WU_{12} + U_{22} < 0$.

Consider the Cobb Douglas type utility function $U(Y, H - E) = Y^\alpha (H - E)^{1-\alpha}$, where $0 < \alpha < 1$. Then the first order condition can be written $\alpha(H - E)/(1 - \alpha)Y = 1/W$ and, in turn, this can be written as $\alpha(H - E) = (1 - \alpha)E$, since $WE = Y$. Thus $E = \alpha H$. It can be readily confirmed that the 2nd order condition is satisfied.

The maximum level of utility can be written $U^*(W) = \alpha^\alpha (1 - \alpha)^{(1-\alpha)} HW^\alpha$. Let W_p denote the private sector reservation wage at which the worker is indifferent between working and receiving unconditional unemployment benefit, A. W_p can be interpreted as the minimum private sector wage in an economy with unconditional unemployment benefits. Then W_p satisfies $U^*(W_p) = \alpha^\alpha (1 - \alpha)^{(1-\alpha)} HW_p^\alpha = A^\alpha H^{(1-\alpha)}$.

Then, the reservation wage can be written as:

$$W_p = (A/H) \big/ \{\alpha(1 - \alpha)^{(1-\alpha)/\alpha}\} = A / H\gamma$$

$$\gamma = \{\alpha(1 - \alpha)^{(1-\alpha)/\alpha}\} < 1$$

Consider the Job Guarantee wage W_j where $W_j = kW_p$ and k<1. Then if JG workers can choose their hours of work, their level of utility can be written as:

$$U^* \left(W_j \right) = \alpha^\alpha \left(1-\alpha \right)^{(1-\alpha)} H W_j^\alpha = k^j U^* \left(W_p \right)$$

The corresponding level of unconditional unemployment benefit at which workers are indifferent between a JG job with freely chosen hours and the benefit is given by kA.

If an unemployed worker is forced to undertake workfare to 'earn' the unemployment benefit, A, then the worker works A/W_w hours if W_w denotes the implicit workfare wage. The worker has a preference for a JG job over workfare if:

$$U^* \left(W_j \right) = \left(kA \right)^\alpha H^{(1-\alpha)} > A^\alpha \left(H - A/W_w \right)^{(1-\alpha)}$$

This inequality can be written as $\left(H - A/W_w \right) < k^{\alpha/(1-\alpha)} H = H\lambda$ where $\lambda = k^{\alpha/(1-\alpha)}$.

Substituting for A using the expression for the private sector reservation wage W_p yields $H(1-\lambda) < \left(W_p/W_w \right) H\gamma$, and this can be written as $\left(W_p/W_w \right) < \gamma/(1-\lambda)$. But the workfare wage exceeds the JG wage (kW_p), then $k < \left(W_w/W_p \right) < \gamma/(1-\lambda)$ is a sufficient condition for a JG job to be preferred to a workfare job paying A for A/W_w hours of work.

In the Table A1 we show the values of γ/(1-λ) corresponding to different values of the parameter α, the elasticity of utility with respect to income and the ratio of the JG wage to the private sector reservation wage, k.

Thus the JG job is preferred for ratios of the workfare wage to the private sector wage along a row that lie between the corresponding value of k and the row entry. Thus for example if the ratio of the JG wage to the private sector reservation wage is 0.6 and α = 0.5, then a workfare wage less than or equal to 0.625 times the private sector reservation

wage yields a lower level of utility. There are entries in Table A1 that exceed unity. In this case workfare with a wage in excess of the private sector reservation wage may still be less preferred than the JG job. Political considerations may preclude setting the workfare wage in excess of the minimum private sector wage. Table A1 shows the range of workfare wages expressed as a fraction of the private sector reservation wage over which workers are prepared to sacrifice hourly wages by taking a JG job as compared to a workfare stint. JG workers can choose their hours of work (and income) but for workfare workers hours of work and income are predetermined.

Table A1 Labour-Leisure choice parameters under Workfare and the Job Guarantee

	α									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	0.50	0.523	0.515	0.508	0.502	0.500	0.504	0.521	0.571	0.698
	0.55	0.603	0.590	0.577	0.566	0.556	0.550	0.556	0.589	0.700
	0.60	0.702	0.683	0.664	0.644	0.625	0.609	0.600	0.615	0.704
k	0.65	0.829	0.802	0.774	0.745	0.714	0.684	0.659	0.651	0.712
	0.70	0.997	0.960	0.921	0.878	0.833	0.786	0.740	0.704	0.726
	0.75	1.232	1.180	1.125	1.065	1.000	0.929	0.855	0.783	0.753
	0.80	1.582	1.510	1.431	1.345	1.250	1.145	1.029	0.906	0.805
	0.85	2.165	2.057	1.940	1.810	1.667	1.506	1.324	1.119	0.907
	0.90	3.329	3.151	2.956	2.741	2.500	2.228	1.917	1.556	1.138
	0.95	6.817	6.429	6.003	5.530	5.000	4.399	3.704	2.884	1.885

Notes: k denotes the ratio of the JG wage to the private sector reservation wage. α denotes the elasticity of the utility function with respect to income.

It should be noted that these estimates are biased against a JG job, given the parameters of the utility function and *k*, because a 'workfare' job and a JG job are not strictly comparable. A JG job is permanent and has all the features of a high paid job (except the wage), such as long service leave and holiday pay, whereas the workfare job is not classified as employment and has limited duration and no entitlements.

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[2] Further, as a guide to policy, the centerpiece of the supply-side strategy – the NAIRU – is now significantly discredited. Mitchell and Muysken (2001) trace the evolution of modern NAIRU models beginning with Layard, Nickell and Jackman (1991) and conclude that each one suffers from particular theoretical flaws or has been proven inadequate when confronted with the empirical evidence (see also Rowthorn, 1995, Chang, 1999; Fair, 2000; Akerlof *et al*, 2000; Mitchell, 2000a, 2001b; Staiger, Stock and Watson, 1997; Rowthorn, 1995).

[3] We are only comparing like with like and so family allowances are considered full compensated.

[4] Let GDP growth be g then $Y_{t-1}/Y_t = 1/(1+g)$. We also use the approximation $(1+r)/(1+g) = (1+r-g)$.

[5] The OECD (1994: 43) advocate that wage and labour costs be made more flexible 'by removing restrictions that prevent wages from reflecting local conditions and individual skill levels, in particular of younger workers'. Since low skilled low wage workers have the highest unemployment rates, this implies a widening of the wage distribution.

[6] The use of the official unemployment rate ignores the growth of contingent work in the USA (see Thurow, 1998 and Mishel and Schmitt, 1995) and also different rates of criminal incarceration (Western and Beckett, 1999).

[7] Dawkins (2000) argues that the growth in average real wages would be reduced by just 2 to 2.5% over the four years. This is based on 25% of workers depending on safety net adjustments and their corresponding wages representing 20% of the wage bill. This final figure appears to be rather high.

[8] Labour Party proposed a Family Tax Credit scheme founded on family income in the 1998 election. The maximum credit for the first child is $3000 with $300 for each extra child up to a maximum total of $3,900. This would be phased in at 10c/$. There would be an income plateau of $10,000 ($30,000-$40,000 for a family with one child) and then the credit would be phased out at a rate of 15c/$. The ALP estimated the package to cost $3b (ALP 1998).

[9] Ingles (2001: 21) points out that under a system of tax credits there is an incentive to exaggerate income up to the plateau, but households in the USA tend to claim fictitious dependents.