

# Senate Economics References Committee

## Inquiry into Reasons for Revenue Shortfall of the Minerals Resource Rent Tax

Submission by Dr John P Weldon

### 1. Introduction

The corporate environment in which the MRR Tax is destined to operate is characterised by high system complexity that is too great for unaided manual operation. Questions of revenue shortfall are therefore regarded as turning on whether advanced modern decision-support techniques were used respectively to

- design the Tax
- defeat its intentions.

The techniques are unique in being able to effectively manage that complexity.

If Government employed these techniques to design the Tax, and if that use was appropriate and sufficiently competent, it is considered that the Tax could and would have succeeded, whether or not the same techniques were also employed by the mining companies in attempts to defeat it.

If, on the other hand, Government omitted to employ the techniques to design the Tax, and the mining companies did use the techniques in attempts to defeat it, the result of the Tax to date was inevitable.

The rather dramatic revenue shortfall of the MRR Tax so far suggests that Government was outclassed by the corporates. This submission briefly describes the context in which this likely outcome occurred.

That context dates back to WW2 and before. It indicates that problems with designing and implementing the Tax are an integral part of a much-larger malaise affecting economic management and policy formulation.

Several overseas situations are introduced, as analogies that are believed to help explain the recent Australian experience with the MRR Tax. These analogies can also contribute to any future assessment of what would be needed, if Government later wishes to revisit the Tax.

Reaching overseas for insights about reasons for the revenue shortfall of the MRR Tax is justifiable and necessary. The above malaise in economic management is global. Like a latter-day *pax romana* the forces responsible are internationally cohesive and their attitudes and practices are relatively standardised globally.

Requirements for a revenue-effective Tax are then stated, with particular reference to modern best practice. Apparent failure to employ this best practice in designing

and implementing the Tax is key to understanding what happened, and how to fix associated problems.

It is believed that the Tax could be rehabilitated and its revenue outcome turned around, from the technical viewpoint. This could be achieved either with reference only to the Tax, or as part of a wider overhaul of economic management and policy formulation. The bureaucratic environment for any such technical initiative would be the real area of difficulty.

## 2. The context of problems with the MRR Tax

Shortly after WW2 the following situation applied.

- The international macroeconomic community had secured virtually-global control of economic management and policy formulation; fiscal and monetary.
- Beginning with John von Neumann (co-founder of game theory) prior to WW2 a series of influential and assertive mathematically-inclined academics decreed that macroeconomics should become a branch of mathematics. Other names included Kenneth Arrow, Robert Lucas and Paul Samuelson; all Nobel prize winners for their work in macroeconomics.
- Huge changes in many aspects of life, initiated or enhanced by WW2, had permanently invalidated macroeconomics. Its key assumptions had always been very restrictive, but that apparently did not matter during the 1930s. Macroeconomics made significant contributions during that period. Now actual behaviour, especially business behaviour, had become quintessential to policy effectiveness and efficiency. From its inception macroeconomics had insisted that actual business behaviour could be disregarded in favour of simplifying assumptions such as profit maximisation. In the 1960s and early 1970s nearly twenty well-regarded academic economists on both sides of the Atlantic independently documented various individually-fatal defects in macroeconomics. These referred mainly to the ideology's assumptions. The economists were ignored. However, those defects were at the heart of the GFC in 2008. Since then a book has codified, confirmed, extended and updated the earlier contributions. This is *'How markets fail. The logic of economic calamities'*, John Cassidy, 2009.
- One huge change that had been activated by WW2 deserves special mention in connection with the MRR Tax. This change, a major process, was known as the 'separation of control from ownership'. Beginning in the Nineteenth Century control of business decision-making gradually shifted away from shareholders to professional managers. The process was complete by 1920. (*The corporation and private property*, Berle and Means, 1932). Large-scale modern enterprise would have been inconceivable without this process. That underlined how essential it had become to take central note of business behaviour for economic management and policy purposes. Macroeconomics never did so, and was anyway not configured for this purpose. The nature and dynamic (time-related) complexity of 'managerial objective functions' and behaviour were sufficient on their own to invalidate macroeconomics.
- The US military and industry had developed concerns during WW2, about limitations in their ability to handle the control problems of that period. In the

late 1940s the Sloan School of Management at MIT was commissioned to develop new techniques for the control of complex managed systems. These causal simulation techniques, a branch of management science, became publicly available in 1957. 'Causal' means that models are developed from information, not data (numbers). Data are provided to the completed information structure (the equations). That approach allows much more comprehensive and detailed models than is possible with traditional mathstats modeling techniques. Also, real prediction is supported, as opposed to inferior forecasting (as in econometrics). Causal models estimate future values in terms of the same factors that generate future system behaviour and outcomes in reality. That defines 'real prediction'.

Peter Wiles of the LSE coined the evocative 'self-sealing ideology' description of macroeconomics in 1973 (*Economic Journal*). However, it is very probable that macroeconomics was like that from the outset; and that, following WW2, it quickly developed into each country's most-influential and –powerful vested interest.. To be a macroeconomist is to have made an ideological commitment that the discipline is the only valid way to describe and manage a national economy. The further step, of excluding anything outside the ideology, was apparently an easy one.

Another apparently easy step was for the official macroeconomic community to manage the advice, information and options made available to their supposed political masters.

Each new government (of whatever colour) immediately comes under the control of the community. From its outset that government receives only macroeconomic advice, plus advice in other areas of government that is acceptable to the community.

**Overseas Analogy 1.** In 2004 the (macroeconomic) policy and analysis area of the Inland Revenue in London was offered an initiative that would have placed the Revenue on at least equal terms with companies and corporations in regard to combating corporate income tax avoidance. Among other uses causal corporate models are the main international tool against corporate income taxation. The Revenue loses 10-20 billion pounds annually in revenue to these models, and has no answer to them.

Nevertheless, the Revenue rejected the proposed initiative without evaluation. Continuing to lose the above amount annually was evidently regarded as an acceptable and necessary price of preserving the macroeconomic community's ideological control, influence and power. The rejection also indicated that the community is not accountable for its performance, including problem-solving.

Now fast forward to late 2012. The chair of the UK's Committee of Public Accounts (Rt Hon. Lady Margaret Hodge) began using a mixture of exhortation, remonstrance and public shaming of senior corporate executives, in an effort to reduce UK losses from corporate tax avoidance. Prime Minister Cameron joined in his colleague's efforts. Exhortation, of course, is a particularly-weak approach to governing a country.

This episode confirmed that HM Treasury and its vassal the Inland Revenue continue to have no answer to problems posed by the corporate models. Further, it indicates that elected officials at the highest levels are kept in the dark by the macroeconomic community about the real reasons for considerable revenue losses. These losses adversely affect the public interest through fiscal inequity. There are additional likely impacts through macroeconomic responses to debt and deficit consequences.

As the post-WW2 period and macroeconomic mathematicisation both progressed, the disconnect between macroeconomics and the public interest also expanded. The ideology has always taught that trade-offs between the conventional goals of public policy are often necessary. Typically, fiscal equity, growth and full employment are sacrificed in the name of preserving or restoring internal and/or external stability.

In those circumstances macroeconomics operates in a manner akin to the mediaeval medical practice of bleeding the patient. It has all the effectiveness and efficiency of harnessing a champion racehorse to a plough, or using a formula one racing car as a tractor. The community either fails to realise, or chooses to ignore, that implementation of this part of its ideology is self-defeating even of its own objectives. As demand is depressed productivity tends to fall. Growth-oriented firms are affected absolutely and relatively the most. Tax revenue tends to fall. Debt, deficits and inflation become more, not less, likely.

Macroeconomics as a self-sealing ideology has imposed terrible costs on the international public interest in recent years. These costs continue with the ongoing economic and financial crises.

**Overseas Analogy 2.** During the period 2005-7 inclusive US financial, housing and insurance regulators had no means of identifying or predicting the catastrophe that descended on them in 2008. Even top managements of US finance and other enterprises lacked the above means. They literally did not know what their floor traders were doing, and where those doings were taking their firms. This was mainly due to US Treasury control and influence. Most financial institutions, including in Australia, have macroeconomic minders whose remit includes ensuring that the community's interests are safeguarded.

Paul Samuelson, one of the arch high priests of Twentieth Century macroeconomics, referred gleefully to 'fiendish frankenstein monsters of financial engineering'; adding modestly that the financial instruments concerned were devised by people like him.

We shall never know whether the old man (he passed away a few months later) understood that he was actually dumping on the discipline that had been his life's work, and which earned him the Nobel prize in 1970. Macroeconomics could never visualise or combat the financial instruments that largely caused the GFC in 2008. Samuelson's discipline was also responsible for excluding the only techniques that could have predicted future institutional behaviour and outcomes. These techniques could have revealed by analysis and 'what if' experimentation how to avoid what actually happened.

Events surrounding the GFC have been documented in detail in two recent books.

- *The big short*, Michael Lewis, 2010.
- *Too big to fail*, Andrew Ross Sorkin, 2009.

These books should be read from the viewpoints of

- What, if anything, did macroeconomics do, or omit to do, to cause the GFC?
- Was macroeconomics successful in resolving the problems that emerged in 2008? If not, why not?

Despite the much greater scale of the GFC there are parallels between it and the recent Australian experience with the MRR Tax, in terms of attitudes and practices of the dominant macroeconomic community in the two countries.

The self-sealing characteristic of the macroeconomic ideology apparently applies in any and all circumstances. No matter how bad are economic conditions and prospects the community will not allow other approaches or techniques to be introduced, or even considered. Macroeconomic minders are well-placed to intercept and deflect extraneous initiatives.

**Overseas Analogy 3.** This comprises emails from the Federal Reserve and the Joint Economic Committee of Congress in 2008 (Appendix). The material is self-explanatory.

Arrogance, blinkered vision, complacency and fanaticism are hallmarks of the macroeconomic community. At the time of writing several national economies are literally being 'managed' down towards banana republic status – all for their own good, of course. Mass unemployment, poverty, restriction of public services, social unrest and even loss of US geopolitical power – are all outcomes of recent macroeconomic policies. Twentieth Century history teaches that such outcomes should never be allowed to happen, for any reason, especially in Europe.

It is necessary to reach back a considerable time for perhaps the most-graphic parallel to these policies.

**Overseas Analogy 4.** In the Fifteenth Century and later centuries the Spanish Inquisition burned alive thousands of people in order to save their immortal souls.

Associated with and reinforcing macroeconomic restrictions on which methods and techniques may be used is the following consideration.

Public servants (federal, state, local) are unaccountable for (non-)use of methods and techniques -- except to their own bureaucracies. In practice that usually means total lack of accountability. To an individual public servant a proposal, to employ methods or techniques with which he/she is unfamiliar, is usually *ipso facto* risky and threatening, even if those methods or techniques are well-established and in

widespread use elsewhere. The public servant has little incentive to support the initiative, and there are no penalties on the person for not providing support.

It is entirely understandable that politicians do not usually oversee this aspect of public administration. They are not equipped to do so. In any case instances of this problem are probably not even referred to politicians. Auditors-general do not appear to have adopted this role. Nobody is actually in charge.

The bureaucracies understand very well that politicians' attention cannot remain on a given issue indefinitely. Bureaucrats (including macroeconomists) are able to ride out short-term crises; resuming business as usual later. Nothing much changes.

In each western country (including Australia) there is a large, latent (but unrecognised) dividend of effectiveness and efficiency waiting to be reaped from adopting advanced modern methods in public sectors. Politicians need to devise ways of applying permanent pressure on bureaucracies to deliver this dividend.

### **3. Requirements for a revenue-effective MRR Tax**

Any outcome of this Tax is produced in the management environment of each of the mining companies. Provisions of the Tax become part of that environment and its associated decision-making. Managerial objective functions are also part of that environment, as are modern tools employed by companies to get on top of the great complexity involved. Mere humans unaided cannot manage such complexity effectively and efficiently.

One management objective is likely to have been how to defeat the Tax or minimise its burden. The above modern tools were probably used for this purpose, just as they are used against corporate income taxation.

As a verifiable assumption a mining company has a causal simulation model of itself. The corporate model is a 'virtual miner'. No other type of model can handle corporate complexity. This corporate model looks like the actual miner and can behave the same as the latter – in time periods of a model run equivalent to actual time periods.

The corporate model is, or may be, used for

- activity and resource control,
- tactical and strategic planning,
- budgeting,
- reduction of operating risk,
- coordination and rationalisation,
- commercial and industrial espionage,
- major civil litigation,
- international corporate income tax avoidance.

Detailed provisions of the new MRR Tax, as those of national corporate income taxes before it, would have been factored into the corporate model as parameters

(constants) and variables. These tax 'entities' are thereby *internalised*. They become part of the closed-loop information-feedback structure of the corporate model that produces its future paths of behaviour and outcomes. Each variable is linked to every other variable, directly or indirectly. Parameters (constants) influence outcomes by impacting on particular feedback loops of variables.

Feedback loops are closed (endless) daisy chains of causation between variables. Loops convey the internal dynamics of any managed system. These loops intersect at points of common individual variables. A mining company model has huge numbers of loops. These are very useful for analytical purposes, but are invisible to anything but the management science techniques.

A change is made in a parameter, or in the initial value of a variable. The corporate model is run with the change and output results are compared to output from a run without that change. Comparison of the two runs comprises the dedicated effects of that change; both across the managed system and across future time.

The mining companies, either singly or even cooperatively, would have run experiments iteratively (by trial and error); changing model entities (other than those of the MRR Tax) until they worked out how to defeat the Tax. The poorer the quality of Tax design, the easier their task would have been.

Top quality Tax design would have used the same type of model, also including the Tax provisions. Having initially formulated a version of the Tax, the designers would have then set out to defeat their Tax; using the same tools and procedures that the miners would be expected to employ.

If a provision of the proposed Tax stipulated by Government was objectionable or vulnerable etc on management-science grounds, the model would have revealed that. The designers could have referred the point back to Government and obtained fresh guidance.

Eventually the Tax designers would have produced a version of the Tax that, to the best of their belief and competence, could not be defeated.

For these purposes it probably would not have been necessary to model the entire miner. Also, the information structure of the model would be *generic* to any miner. It is the data (numbers) that pass through the generic information structure that are unique to individual miners. Only one model would therefore have been needed for design purposes.

Moreover, it is probable that the Tax designers would not have needed the miners' own detailed data; only indicative data whose individual items are correctly sized relative to each other.

## 4. Conclusions

Design and implementation of the MRR Tax is believed to have been defeated by corporate use of advanced modern methods: causal simulation models from management science.

No matter what the *prima facie* reasons for failure of the Tax are deemed to be those reasons could and should have been identified and resolved during the design phase, using the appropriate modern techniques. If, as appears unlikely, an attempt was made to use those techniques, that attempt was clearly inadequate and unsuccessful.

Responsibility, for failure to employ appropriate techniques in designing the Tax, rests with the official macroeconomic community. This also applies if bureaucratic means were used to undermine an attempt to employ those techniques, and those means rendered the attempt unsuccessful. The Senate Committee can hopefully check out these possibilities.

Positive results could emerge from this episode of the MRR Tax. Firstly, the Tax could be rehabilitated.

Also, elected representatives could take steps in the public interest to end the rule of the official macroeconomic community in Australia. Unlike the Tax this community could not be rehabilitated. Its members, if left in their positions, would seek to undermine any initiatives inconsistent with the macroeconomic ideology.

March 2013



## Appendix

### 1. Email from the US Federal Reserve.

Subject: Best Offer

To:

From:

Date: Thu, 16 Oct 2008 08:25:10 -0400

Dr. John P. Weldon  
Corporate Dynamics  
Canberra, Australian Capital Territory

Dear Dr. Weldon:

I am responding to your email of September 15, 2008, in which you proposed that the Federal Reserve obtain your product BEST OFFER.

Based on the material provided in your email, I have recommended that the Federal Reserve not pursue your product. As you may be aware, the Federal Reserve has a very large research staff of Ph.D. economists, statisticians, computer scientists, and other researchers. We rely on this staff to produce research, analysis, and specifically a wide range of macroeconomic models in support of formulation of monetary policy.

Thank you for writing,

Sincerely,

Brian F. Madigan  
Director  
Division of Monetary Affairs  
Board of Governors of the Federal Reserve System

Note. BEST OFFER is a proposed project to replace macroeconomics, not a 'product'. The Federal Reserve did not evaluate the proposal. The project proposal was, however, evaluated for Prime Minister Malcolm Fraser in 1977. The evaluator reported that the project outcome (a software-based decision-support tool) 'offers real opportunities for arriving at alternative determinations of economic policy issues'. The Federal Treasury ensured that no support was given to the project. JPW

### 2. Email from the Joint Economic Committee of Congress

Subject: Project BEST OFFER

Date: Thu, 30 Oct 2008 13:07:04 -0400

From: "Brustein, Nate (JEC)"

To:

Dear Dr. Weldon,

Thank you for your correspondence. At the request of Colleen Healy, we have reviewed your materials and determined that they are not suitable for the Joint Economic Committee.

Yours,

Nate Brustein  
Joint Economic Committee  
Policy Analyst

Note. No evaluation of the project proposal was undertaken. JPW