

# 25<sup>th</sup> Central Bank Macroeconomic Modelling Workshop

## “The Future of Policy Modelling”

Panel remarks by William White

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### Introduction

As indicated by the name of Doug Laxton’s group, “The Better Policy Project”, the ultimate objective of modelling by central banks is to improve the conduct of monetary policy. As has been recognized for decades, this implies blending insights from the models into a framework for conducting policy (and vice versa) and for communication of that policy to the public. None of this is easy, and we have had 25 years of these workshops striving to improve how central banks do things.

The Agenda for this three day meeting is hugely rich and the organizers must be congratulated. I am personally honoured to have been asked to participate in this Introductory Panel, particularly since my active model building days at the Bank of Canada ended decades ago. Even then, I was no longer in the trenches, but pleased to oversee the pioneering work being carried out by Doug and colleagues like David Rose, Bob Tetlow, and Paul Masson among others. I am particularly glad to see that Doug is still so active after his retirement from the IMF. There is life after retirement, and I know because I have already retired three times myself.

As I look back on my long career in and around central banks, it seems I was constantly repeating, “I’m sorry but it seemed a good idea at the time”. Put otherwise, I have believed a whole host of things that I subsequently realized were not true. At various times, I have espoused targeting the exchange rate, targeting the NAIRU, targeting the money supply and inflation targeting. In each case, the underlying belief was that the economy was both understandable and controllable – in short, deterministic. I now am of the view that this underlying belief was wrong and only by changing that underlying belief can we make

progress. Since a US dollar in 1907 (when the Fed was founded) is now worth less than 5 cents, and since financial crises are becoming both more frequent and more serious, there is plenty of progress to make.

Today, I believe something quite different. I believe that an economy is a complex, adaptive system (a CAS), more like a forest than a machine. It is populated by a zillion heterogeneous agents, each quite ignorant and guided by heuristic rules, and each pursuing many objectives including altruistic ones. It is the interactions between the individual agents, and the constant learning and adaptation, that produces both emergent properties (like macroeconomic aggregates) at a moment in time and evolution (like creative destruction) over time.

Systems of this sort are ubiquitous in nature and society and have been widely studied by other disciplines<sup>1</sup>. Moreover, they have common characteristics that suggest lessons for macroeconomics in general and monetary policy in particular. Among many other lessons<sup>2</sup>, four lessons stand out.

First, these systems always break down according to a power Law. Lesson, be prepared for non-linear outcomes.

Second, these systems are too complicated and dependent on feedback mechanisms to be fully understood. Lesson, minimax rather than maximize

Third, anything could trigger a breakdown in a stressed system. Lesson, focus on the stresses not the triggers.

Fourth, these systems are adaptive. Lesson, expect the unexpected. Or, more broadly, be aware of confirmation bias. Be humble about what you really know.

It is from this CAS perspective that I conclude that I “like” a lot of the developments that differentiate the Mark 2 version of the FPAS from the Mark 1 version. Let me list the “likes” as I have gleaned them from videos posted by “The Better Policy Project”.

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<sup>1</sup> A good introduction is by Philip Ball (2012) “Why society is a complex matter”. Springer.

<sup>2</sup> See two essays by me. “Simple lessons for policymakers from embracing complexity” <http://williamwhite.ca/2020/05/22/simple-lessons-for-policymakers-from-embracing-complexity> . Also “Conducting monetary policy in a complex, adaptive economy: Past mistakes and future possibilities” <http://williamwhite.ca/2018/04/11/conducting-monetary-policy-in-a-complex-adaptive-economy/> .

### **1. Economists cannot forecast.**

This is a standard CAS finding. The IMF, OECD and all major central banks totally missed the GFC in 2009 and then forecast stronger growth and higher inflation than actually materialized – ten years in a row. It is high time to say there is something fundamentally wrong with the analytical framework. At best, we can identify recurring patterns.

### **2. Alternative scenarios beat baselines.**

We need to develop alternative narratives that both model builders and policy makers can buy into. “Plausible” narratives for model builders need not be limited to two standard deviations from Normal. Policymakers “gut feel” must not require totally implausible assumptions about economic behaviour. Deleting the baseline also reinforces the insight that we live in a radically uncertain world.

### **3. Minimize loss functions.**

The best we can do, given our limited knowledge, is to avoid really bad outcomes.

### **4. Recognize non-linearities and endogeneities are crucially important.**

Some functions (eg Philips curve) might be non linear with big policy implications. The credibility of central banks might itself be non-linear, and could be threatened by past policy decisions. Indeed, the whole system might be subject to “tipping points”.

### **5. Recognize the limitations of monetary policy, especially at the ZLB.**

The use of any policy instrument is likely to have diminishing efficiency or to have some undesirable side effects. Sometimes alternative or complementary instruments can be useful in reaching objectives.

### **6. The credibility of the monetary authority affects the effectiveness of the policy instrument.**

With credibility, policy instruments need to move less. When credibility is threatened, larger movements are required. Credibility is therefore a valuable asset that needs sustaining

## **7. The output gap required to ensure price stability need not ensure financial stability.**

These are different outcomes subject to different forces. In particular, financial stability depends in part on debt levels (a stock) which have been driven primarily by past events, not current “gap” levels.

Having listed my “likes” about this work in progress, let me also identify some area where I think some questions can be asked or where more work seems desirable.

### **1. Is “too low inflation” the only “dark corner” to be avoided?**

A complex system can become stressed in many ways. Of particular concern in the modern world is the buildup of financial imbalances that can culminate in crisis: a boom-bust process. Such crises have become more frequent and more serious in recent decades. Surely, we should wish to avoid such outcomes as well.

This is a profound complication for the conduct of monetary policy since easy money, to avoid the dark corner of too low inflation, creates the conditions in which financial imbalances thrive.

### **2. Are “symmetric” policies, where above-target and below-target inflation is resisted equally, appropriate?**

Very low, even negative inflation is not always bad. Indeed, if it is the result of positive productivity growth, falling prices are an efficient way to redistribute the fruits of that growth to labour as well as capital. Further, nominal wages are stickier downwards than upwards, so an upwards wage-price spiral seems more likely. These arguments seem to say an asymmetric response is preferable to a symmetric one.

### **3. Should monetary policy be tightened “aggressively” when central bank credibility is threatened?**

The logic of this is clear, but what dangers does this imply when the financial system is vulnerable to shocks. It was the speed in the rise in gilt yields that caused the recent hedging problems in the UK. There are also grounds to believe that other central banks with highly leveraged economies should view this as the “canary in the mine shaft”.

Another looming issue is what aggressive tightening does to the government's fiscal position. Most governments already have contractual obligations (on and off-balance sheet, plus contingent liabilities) that are already multiples of GDP. In many cases, QE has materially shortened the duration of government debt, and has also led to operational losses at central banks<sup>3</sup>. Could aggressive tightening lead to rising fears of “fiscal dominance” and raise fears of inflation rather than dampen them?

#### **4. Are supply side shocks being given adequate attention in policy formulation?**

There are grounds for believing that central banks systematically underestimated the importance of positive, global supply side shocks in the decades preceding the GFC. In the pandemic, they first underestimated the magnitude of the supply side losses and then prematurely described them as “transitory”. Such errors must raise concerns looking forward since several prospective negative supply side shocks can already be identified<sup>4</sup>. We are moving from an “era of plenty” to an “era of shortages”. If so, such shocks will sharpen the conflict between the need to tighten monetary policy aggressively (to maintain credibility and avoid a wage-price spiral) and concerns about financial fragility and other side effects.

So, to summarize, I think FPAS Mark 2 is a significant step forward in using models to help guide the conduct of monetary policy in the real world. However, I suggest there might still be other steps to take to more fully recognize the economy as a complex, adaptive system rather than a deterministic one. Hopefully, this conference will help significantly in moving the process forward.

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<sup>3</sup> In market value terms, the net worth of most large central banks is hugely negative. The Fed is likely over \$1 trillion underwater.

<sup>4</sup> <http://williamwhite.ca/2022/10/26/the-feds-big-inflation-fight/>