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Currency wars – not public debt – may create a financial meltdown*

Robin Pope** and Reinhard Selten***

Abstract

In studies concluding that public debt may hamper GDP growth, the debt tipping effects are estimated as if there were a single global currency. This means that such studies ignore the likely biggest cause of changes in growth rates, namely damage from exchange rate liquidity shocks because we do not live in the fairyland of a single global currency. The conclusions of these studies are accordingly invalid. They deflect attention from a prime danger, namely an exchange-rate-precipitated global meltdown – a danger of the repetition of events of 80 years ago.

These studies are misleading in other respects too. Their estimates of growth determinants conflate the differential growth effects of government expenditures with those of tax concessions and uncollected taxes as contributors to government debt. The conflation entices adherents to see all increases in government debt as arising from excessive expenditures, so that in the current crisis, the real problems are unaddressed. Instead, harmful policies of austerity and depreciation, are proposed that would exacerbate the problems and heighten the dangers. In this global downturn, policy should be redirected to avoid repeating the tragedies of the 1930s and 1940s when armaments, Hitler, a world war, then a Korean war were all needed to make the fiscal stimulus mighty enough to restore US employment after the 1930s global meltdown from exchange rate liquidity shocks. Needed are employment-generating fiscal stimulus in societally productive activities, reinstatement of the constraints that countries employed into the 1970s to limit government interest rates, and moves to instate a single global currency.

key words exchange rates, employment multipliers, central bank cooperation, central bank conflict, public debt, tipping points, uncertainty, Hitler, World War 2, Korean War, fiscal stimulus, government expenditure, Eichengreen, Sinn, Rogoff, Reinhardt, world currency, single global currency

JEL: E6, F31, G01, H62, H63

Belief that fiscal stimuli can damage a country's GDP fuels the propensity of ratings agencies to downgrade countries on the basis of its government debt level being at such a tipping point.¹ Related beliefs underlie the Maastricht Treaty's limit on the government debt to GDP ratio for members of the euro, and contribute to Germany's reluctance to offer a substantial fiscal stimulus package to Portugal, Ireland, Greece and Spain.

The government debt tipping point estimates stem from the analytical approach of influential economists who subjugate the understanding of reality to the confines of tractable algebraic models of maximising agents. The pertinence of such models to science and policy rests or falls

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¹ See eg the 5th August 2011 US government's downgrade to AA+ by ratings agency McGraw-Hill Cos and the threat of a further downgrade purely on the basis of the debt tipping point presumption, Detrix February 9, 2012.

on the appropriateness of the model assumptions. Modellers have an ethical duty to be frank enough about their assumptions. Models based on inappropriate assumptions are bad science, and can pervert decision-making. The global economy is already suffering from such bad science perverting decision-making. "Quants" (financial mathematicians) failed to be frank enough about some excessively optimistic assumptions underlying their models. The resultant false confidence in these models aided in exploding the derivatives market in the context of an altogether excessively leveraged financial sector and an absence of adequate regulation of derivatives.²

It is vital to avert a similar misuse of tipping point studies based on a failure to recognize that their underlying assumptions are inappropriate. The approach assumes away: 1) exchange rate movements, 2) most of the economic and employment ramifications of government debt, and 3) private sector waste. It is vital to avert a similar misuse of tipping point studies through economists failing to alert policy makers to the inappropriate assumptions on which these studies are based. In assuming away these key matters, tipping point studies divert policymakers from risks of damage that exchange rate changes could wreak. The damage could be far more catastrophic than that which occurred in the aftermath of the disorderly collapse of Lehman Brothers on 15th September 2008.

Below, Part 1 itemises the inappropriate conceptual framework and assumptions underlying tipping point studies. Part 2 identifies the misuse of the US war years in the most cited debt tipping point study, that of Reinhart and Rogoff (2010). Their study misses the actual direction of causation, from the demobilisation (withdrawal of military fiscal stimulus) reduced growth and higher debt. Part 2 reveals that the US only regained its pre 1930s employment level with the succession of fiscal stimuli from World War 2 and the sequel Korean War. Part 3 concerns the damage caused by exchange rate changes. It itemises the six principal false arguments economists invoke. It highlights the selective use of data and misleading level of aggregation that results in economists missing the extreme damage caused by big exchange rate changes. With six decisive historical instances of the devastation caused by exchange rate movements, it illustrates the gulf between their conception of exchange rate changes as either benevolent or harmless, and the reality of exchange rate changes ruining firms and governments. Part 4 concerns the current risk of a global meltdown from an exchange rate liquidity shock that economists have ignored. Economists bear responsibility to notice and avert this risk since they entice their governments to maintain the distinct currencies introduced

² The false confidence arose because "quants" shifted from mathematically rigorous models when the entities and relations in them were uninterpreted algebraic formalisms. They shifted to having themselves employed in the academic and commercial financial sector without admitting and alerting others that once these algebraic formalisms receive financial sector denotations, the assumptions required understate the risks of applying the models, including the risks of generating a global meltdown. On this deceptive use of formal models and its contribution to the current global financial crisis, see for instance Humbolt University financial mathematician Hans Föllmer's 2009 careful explication in *Fokus*, David Colander et al (2009) and other output of the Dahlem Group's Economic Modeling project such as its 2009 "Mathematics, Methods, and Modern Economics".

in the nationalistic fervour of national central banks, instituted in many countries in early 1914. Part 5 concerns the 1920s, 30s and 40s. It alerts readers to how the nationalistic exchange rate depreciations of the interwar years that wrecked global trade and capital flows and aided the rise of Hitler. His bigger, earlier use of fiscal stimuli reduced Germany's unemployment to its pre-depression level eight years earlier than did the US's belated armaments fiscal stimuli. Part 5 thus directs attention to the role of military fiscal stimuli and the exchange rate stabilisation agreement (Bretton Woods) in reviving output, trade, and ending the Great depression. Part 6 concerns evidence in favour of eliminating the risk of an exchange rate liquidity catastrophe and by adopting a single global currency. Part 7 concludes and points readers to our companion paper on the structural excisions needed to end the current crisis, a paper titled "A Structurally-induced Crisis – Downsizing the Financial and Prescriptions Drugs Sectors to Productivity, and Taxing the Bubble-Induced Wealth Concentration – *Misattribution of the Crisis to Macro-Factors – the Euro and Government Spending*"

1 THE FAULTY CONCEPTUAL FRAMEWORK

Debt tipping point fears stem from econometric estimates that are mis-specified because the underlying analytical approach is naively aggregative. Its inappropriate conceptual framework and assumptions miss the main causal chains impacting on growth.

1.1 The single currency assumption

First and foremost, none of the tipping point studies includes as an explanatory variable the likely prime driver of reductions and reversals in economic growth, namely damage to growth caused by exchange rate shocks. The approach computes econometric coefficients as if governments and firms operated in a fantasy world in which there always had been and always will be a single global currency.

1.2 The single multiplier assumption for all components of debt

Tipping point estimates assume that there is no need to decompose aggregate debt to get meaningful econometric multiplier estimates, and no need to separate output from employment multipliers. This would only be true if every component in every stage of the cycle had the same multiplier.

But it is fundamental to decompose by the stage of the business cycle. Apart from easing bottlenecks, the stimulus multipliers must be zero at full capacity. But many sub-components of government expenditure have substantial multipliers when unemployment is considerable. Second it is essential to distinguish between a tax cut stimulus and a government expenditure stimulus. Government expenditure multipliers typically have more stable and bigger expansionary effects than tax cuts.

This is because tax cuts can be saved not spent. Indeed tax cuts may be primarily saved in situations like the present in which the overleveraged corporate and household sectors are deleveraging, Koo (2003, 2009, 2011). Where saved, the tax cuts fail to *directly* boost GDP. It

is moreover dubious that the tax cuts will *indirectly* boost GDP. They could indirectly boost GDP if they inspire those financial institutions in which they deposit their tax cuts to reduce their indebtedness to loan it out to other would-be-borrowers in the real sector activity. But currently many banks prefer to increase their free reserves or to invest deposits in asset markets (proprietary trading).

By contrast, fiscal stimulus in the form of government expenditures are *by definition* spent on real sector goods and services. By definition, they are not squirrelled off into asset markets instead of expanding the real economy. Thus at a minimum, they generate an initial increase in GDP by that exact amount, except insofar as the expenditures leak into imports or divert already employed resources.³

Third, the stimuli from different components of government expenditures vary dramatically over time and are known to have radically different multiplier effects, rendering it basic to solid econometric estimation to decompose in this respect. Thus while the housing renovation subsidies instituted by the Australian federal government in 2009 were engineered to have their direct impact within a year, and most of their multiplier effects, within two years, fiscal stimuli in the form of education subsidies will boost GDP over the entire working life of that recipient if its net effect is to raise national labour productivity (one of the goals of the US' GI bill facilitating university education of its returned military after world war 2). Yet debt tipping point studies estimate as housing renovation and education subsidies have the same impact on GDP in every year after they are implemented.

Fourth, in economic depressions, unemployment can damage society and risk democracy. Thus, output multipliers are partially beside the point. What is key are employment multipliers. As has been uncomfortably salient since the DotCom bubble burst, output can grow with minimal employment growth, a "jobless recovery", that is output and employment multipliers can be very different.

In summary, the quantitative causal impacts of the different components of debt on output and employment are radically different. These radical differences moreover have been known for around forty years. Yet none of these four forms of decomposition occurs in tipping point studies such as those undertaken by Carmen Reinhart and Kenneth Rogoff (2010), Mehmet Canner, Thomas Grennes and Fritz Koehler-Geib (2010), Manmohan Kumar and Jaejoon Woo (2010). To have these radically different multipliers collapsed, along with changes in interest rates, into a catch-all term, "government debt", is shoddy econometrics – ignoring differences discovered some forty years ago as regards effects on output. This leaves entirely unattended the vital policy issue of employment multipliers.

³ Thus those components of the fiscal stimulus package of the Australian federal government in the 2009 crisis comprising money to school boards who used it to erect a new hall *in the next few months*, and to those households who *in the next few months* improved the insulation of their houses were guaranteed to boost employment and GDP in the downturn when in which construction and household renovation personnel and materials were underemployed, and the import content of these activities is modest.

1.3 Private Sector Waste

A third inappropriate assumption in tipping point studies is a constant (zero) level of private sector waste. But private sector bubbles characterise some eras, and are largely absent in others. None of these tipping point studies measure the rising wastefulness of private production over the last 40 years, not even that in those components of the financial and pharmaceutical industries that have been highly injurious to health and economic well-being.

1.4 Overall

When the likely principal factor yielding big changes in growth is omitted, and when the industrial scale wastage of resources in cancerous bubble components of the private sector are ignored, tipping point inferences are unwarranted. Such inferences rather deflect economists from serious policy issues. One serious issue is the danger that a severe exchange rate liquidity shock would generate a financial meltdown, not merely a three-day liquidity freeze as occurred after Lehman Brothers collapsed on 15th September 2008, addressed in this paper. Another serious issue is what should be done to remove waste in the financial and pharmaceutical sectors, addressed in our companion paper in this volume.

2 WAR DATA

In inferring a point beyond which more government debt reduces US growth, Reinhart and Rogoff (2010) deduce tipping point once the government debt to GDP ratio reaches 90%. However, their estimate is made over data from multiple countries. For only 2.3% of Reinhart and Rogoff's US observations was the US government debt to GDP ratio above 90%, and as Randy Wray and Yeva Nersisyan (2011, p134) further demonstrate, these observations spring essentially from the slowdown in the US at the beginning of the demobilisation after World War 2. Indeed the US took 6 years to build up enough productive output after the war ended early in 1945 to replace the fiscal stimulus of armaments (that accounts for the lion's share of the doubling of US real GDP between 1939 and 1944). In fact GDP and debt had essentially and unsatisfactorily reached a plateau by 1949. It was only with the fiscal stimulus of the Korean War, beginning mid 1950, that US GDP rose above its level in the last full war year, 1944, and debt declined below 90%.

Tipping point theories are about government debt *causing* changes in GDP. It is vital not to confuse them with the reverse, with theories of how changes in GDP cause changes in government debt. Such a reverse causal flow is invariably present, since reductions in GDP other things being equal, cause an increase in government debt (due to reduced taxes received and more government expenditures needed, e.g. for helping the unemployed). Care, not careless use of data, is therefore required to disentangle these two causal chains.

World War 2's government fiscal stimuli (armaments build up not covered by tax hikes) is an unambiguous instance of the *reverse causation*, namely of a GDP expansion – without a comparable escalation of tax rates – *causing* a rise in government debt, as is the sequel demobilisation episode (withdrawal of this fiscal stimulus). In broad brush, World War 2

expenditure was comprised primarily of spending on personnel and munitions in a US that entered the war suffering severe unemployment. There was little change in tax scale and the combination likely had the following effects. The previously unemployed personnel spent essentially all their income boosting the income of other previously unemployed suppliers of their needs, with big fiscal multipliers yielding tax receipts in excess of the personnel incomes paid by the US government. The munitions industry also employed previously unemployed people and to this extent had like multiplier and tax effects. But munitions have too low an embodied labour content so that expenditures on munitions result in an overall increase in the government deficit. Demobilisation got rid of the contribution to the government deficit from munitions so that the government deficit might have shrunk except for the fact that the previously employed military personnel are now mainly unemployed, sending a negative output and tax stimulus through the economy to such an extent that there is a rising government deficit until substantial numbers of the demobilised locate civilian employment. See Table 1.

Table 1: Reverse Causal Chains to those of Debt Tipping Theories for Wartime US and its Sequel Demobilisation

	World War 2 Armaments Stimulus						Demobilisation			Plateau		Korean War Stimulus	
	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Real US GDP (\$ billion)	1072	1166	1365	1617	1882	2034	2011	1791	1775	1853	1843	2004	2159
Public Debt / GDP	65%	70%	61%	61%	81%	101%	124%	129%	112%	101%	103%	96%	83%

Sources: <http://www.bea.gov/national/>
http://www.usgovernmentsspending.com/downchart_gs.php?year=1950_2015&units=p&state=US&chart=H0-total&local=s

It would be patently false to interpret the World War 2 demobilisation contraction in US GDP as having any causal connection whatsoever to a US government debt tipping point. It was rather a case of a normal post-war demobilisation depression – the typical drop in growth caused by the withdrawal of the fiscal stimulus of payment for armaments and military personnel. By eliminating abruptly the war-time segments of GDP, demobilisation damaged US GDP growth. Simultaneously the demobilisation caused US government debt to escalate since it eliminated government revenues previously obtained via taxes on profits earned by war industries and from incomes of war industry and military employees. It is of course impossible to blame demobilisation depressions on government debt; it is similarly impossible to invoke Reinhart and Rogoff's tipping point econometric estimates at a threshold of 90% as having any pertinence for the current US debt situation. It is a false inference regarding direction of causation – to propose that these data points supply evidence for a US tipping point theory. Rather these years are prima facie evidence of reduced economic growth from lack of a big enough and rapid enough fiscal stimulus package to replace the globally destructive mass armaments fiscal stimulus that occurs abruptly at the end of any war. Peaceable fiscal stimuli such as the GI bill that provided funding for college (or high school or vocational) education for returning World War II veterans (commonly referred to as **G.I.s**) as well as one year of

unemployment compensation and some additional benefits while helpful, were inadequate. The full recovery came only with another wartime fiscal stimulus, that of the Korean War.

Although the flaw of including the Second World War and its sequel the Korean War is absent from some other tipping point studies, these studies also lack contemporary relevance. This is because this entire genre of studies suffers other serious flaws.

3 DAMAGE CAUSED BY SUBSTANTIAL EXCHANGE RATE MOVEMENTS

The prime flaw is that government debt tipping studies are conducted as if there were a single global currency and thus fail to allow for the exchange rate damage wreaked by unpredictable massive exchange rate changes. The exclusion stems from widely held views amongst economists that changes in exchange rates are benevolent or at least non-damaging. The widely held view among central bankers and academic economists, including Reinhardt and Rogoff, is that in omitting the fact of multiple unpredictably massively realigning currencies, they are not omitting an impediment to growth – not omitting a principal cause of reduced and negative growth.

Real world exporters, importers, borrowers and lenders remain flabbergasted that any policy influential economist can hold such a view, when it is so patently in conflict with the facts of the massive damage that substantial exchange rate movements cause. This entire section concerns damage caused by exchange rates and how mainstream economics misses all the damage through shoddy arguments. Any serious grappling with the global financial crisis and its future risks pertaining to the Euro (through its higher than average publicly indebted members – and to the US from contagion effects) requires that economists enter the real world.

Entering the real world requires recognition of the scope for actual or feared substantial exchange rate movements to generate a global meltdown, as occurred in the 1930s. A financial shock makes it difficult enough to maintain capital flows under any conditions. Rolling over debt and continuing other forms of inter-country lending becomes increasingly costly for borrowers. Such shocks create additional demands for currencies in which most international debt is denominated (nowadays US dollars and yen). These currencies in which the international debt is denominated start appreciating rapidly as many borrowers find themselves denied permission to rollover their debts and have to get the foreign currency to repay in full or go bankrupt. The appreciation of these currencies against the currencies of the ultimate lenders accelerates the repayment difficulties of the lenders. On top of suddenly having to repay the principal, to repay it the lenders have to find more by the amount of the appreciation. A substantial appreciation renders rolling over exceedingly difficult – and repayment of the principal when the roll-over is refused, as is typical in shocks, quite out of the question. Lenders recognise how depreciations of the borrowers' currencies increase the likelihood of default, and impose exchange rate risk premia (interest rate surcharges) on lending to residents in countries deemed likely to depreciate their currencies.

When the risk of depreciation gets big enough international borrowing is essentially extinguished, as was Germany's fate in 1931 – and many another borrowing country, such as Australia. These risks of depreciations are ever present in emergencies. It is hard for

governments to make their exchange rate promises believable enough to the lenders in advance, when lenders are already jittery. To see how hard it is in an emergency to establish credibility, consider Germany in the early 1930s. Germany suffered the fate of massive withdrawal of loans from the US despite not depreciating against the US dollar in its effort to keep the foreign loans flowing – instead facing a massive appreciation of its currency against the US dollar (when that country left the gold standard). The US lenders however could never be sure whether the German government would follow the UK in 1931 when it left gold and depreciated against the US dollar.⁴

Depreciation risks mean that lenders to borrowers in another currency face risks piled on risks piled on risks:

- (i) risks of non-repayments because economic conditions are bad,
- (ii) these risks are escalated by the borrower's country engineering a beggar-thy-neighbour depreciation in the hope that this will boost exports and employment – a depreciation that may preclude its borrowers repaying foreign debt (as the repayment interest charges have risen by the depreciation)
- (iii) both risks are escalated by trade barriers and depreciations in third countries, all of which indirectly limit the borrower's scope to make export earnings with which to repay the debt.

This triple tier of risks from actual and feared exchange rate changes can freeze inter-currency block capital flows and then their trade flows. This global meltdown of capital and (to a large extent) trade flows occurred only 80 years ago, and to such an extent, that measuring integration by inter-country spreads, capital flows have never recovered that degree of global integration.

A like melt-down of capital flows would have happened recently if nationalistic central banks had failed to be sufficiently cooperative in using central bank swaps offered by the US Treasury and Federal Reserve. Mercifully it did not happen in the crucial twelve months beginning in December 2007, Allan and Moessner (2010). There was merely a three-day freeze when the US Fed failed to understand the ramifications of not having a US taxpayers' guarantee, or of organising an alternative taxpayer backed takeover of Lehman Brothers.

But the situation remains ultra dangerous. Many central banks are far less cooperative now than three years ago. Further, the exchange rate rescue during 2008, as detailed in Part 4, happened despite total ignorance amongst the central bankers of its exchange rate ramifications. The currency swaps among central banks that rescued the system over 2008 were organised to bring to a close the system by which the US Fed was bailing out foreign banks before US politicians discovered that this was what they were doing (see Part 4). The world financial system is exceedingly unsafe while central bankers, educated by economic academe, remain blind to how exchange rate changes could freeze inter-country lending, as they did in the 1930s – when nobody knew who would or would not go off gold, nor when. Their blindness to risks from exchange rate changes results in closed economy modelling of the crisis in terms of interest rate spreads in a single currency, eg Sengupta and Tan (2008), Taylor and Williams (2008).

⁴ As it happened, Germany did not follow this depreciation route in an attempt to boost employment in exports but instead followed the more successful employment route of building up armaments, as discussed later in this paper.

When multiple currencies and exchange rate changes are considered, as detailed in sections 3.1 to 3.7 below, economists' blindness to their damage springs from faulty partial analyses of misleadingly simplistic models, coupled with selective use of data.

3.1 Selective use of data on beggar-thy-neighbour depreciations

From overly simplistic models such as Mundell (1961), the conclusion that deliberately engineered exchange rate liquidity shocks are beneficially equilibrating stems from economists' data selectivity. Economists' selectively pick beginning and end period data of a country smashed by a massive exchange rate depreciation, followed by its ultra low GDP growing for a few years more rapidly than its neighbours. This selective short-term perspective praises any transient beggar thy neighbour effects that are spotted as if they must be beneficent equilibrations. But accounting identities across the set of countries preclude such an equilibrating conclusion, Pope (2009). The praisers rarely take a long enough perspective to notice that the devastated country that depreciated typically never recovers its comparative GDP ranking. The praisers rarely notice that they could have as readily selected counter examples to their conclusion. Even massive depreciations can fail to improve the trade balance in the short to medium run if their trade competitors face a like shock and similarly depreciate. This was for instance the fate of the 1930s, and again the fate of south east Asian economies in the aftermath of their late 1990s shock, Duttagupta and Spilimbergo (2004).

3.2 Misleadingly aggregative models behind depreciation advice for Greece

Today Greece is being unwisely pushed toward a depreciation by those who misconstrue depreciations as equilibrating panaceas, employ selective examples,⁵ and make unwarranted use of simplistic models that aggregate together all countries whose government debt rose steeply during the financial crisis, eg Hans Werner Sinn (2011), Ken Rogoff (2012a, 2012b). Thereby such economists fail to discern that Greece's high level of government debt does not arise from either lack of competitiveness or big government expenditures (requiring an austerity programme). As Yannis Monogios of Greece's Centre of Planning and Economic Research itemises, Greek government expenditures are modest by euro standards. It is Greece's collection of taxes from the wealthy self-employed that is dismal, way below the standards of other euro countries, Monogios (2011).

Such tax evasion cannot be cured by increasing competitiveness, or by depreciating, or by austerity. Nor can fiscal transfers cure such tax evasion, much as transfers are desirable. Nor can tax evasion be cured by interest forgiveness, much as such forgiveness is desirable.⁶ But there are numerous hitherto untried ways for Germany (and others) to assist Greece in reducing

⁵ Selectivity could yield equally easily the contrary of this advice, Greece, should appreciate – not depreciate – to gain competitiveness, if we took say Japan as the example. Japan's trade balance rose massively in tandem with her appreciations for decades. This however is as arbitrarily selective and ignoring all the other complexities and interactions and associated conflicting interests of capital and trade flows. A laboratory experiment avoiding some of these misleading simplicities, reported in our companion paper in this volume, indicates that under real world complexity a single world currency is better for countries maintaining competitiveness.

⁶ Interest forgiveness is doubly desirable when (see the last paragraph of section 3.4 below), the euro bloc *as a whole* failed to install sensible protective measures against government interest costs rising *unduly* through withdrawal of foreign hot money flows.

tax evasion by its wealthy, including three that would aid Germany in: 1) collecting taxes from her own wealthy tax evaders, 2) fulfilling her own Maastricht Treaty debt limit obligations, and 3) reversing her dramatic increase in inequality over the last decade. Indeed, all these below measures, along with a wealth tax, would in all developed countries benefit government coffers, economic efficiency, and democracy. All developed countries have suffered, even if in some respects less than Greece, from far too much wealth being accumulated over the last forty years by a minimally taxpaying upper elite.

First, Germany and Greece could together do what many governments have been threatening for over a decade but never done (presumably since too many friends of politicians would be discovered). This is to have their nationals' secret bank accounts accessed by their tax officers to collect unpaid taxes. A sizable country can get such access with threat of non-bank clearance with Swiss banks, and any country can eliminate its nationals' use of other tax havens if it so wishes. A second avenue is adopting Sweden's publicly available tax records for all citizens. A third avenue is Denmark's culture of reporting on tax evaders in contrast to that of Greeks and Germans who only report thieves of physical items from private houses. A fourth avenue is luxury-graded import duties and sales taxes, Kakwani (1983). This avenue would penalise German exporters of luxury goods such as Mercedes Benz, since the wealthy Greek non-taxpayers have a marked propensity to import these.

Greece illustrates the error discussed in section 1.2 above, faulty policy analysis and advice by failing to decompose debt into its expenditure and tax components. A focus on *total* Greek debt – without decomposing it to notice that the faulty component is wealthy tax evaders – has resulted in many economists making the euro a scapegoat. With rose-tinted selective optimism unconnected to the real world issue of how to extract taxes from the wealthy self-employed – they see a beggar-thy-neighbour depreciation as the panacea, and through their misdiagnosis of where the problem lies, endanger the euro.

3.3 Misleadingly aggregative models behind depreciation advice to Ireland, Spain, Portugal

According to Sinn (2011), Rogoff (2012a, 2012b), Vernengo and Perez-Caldentey (2012), the unemployment crisis besetting non-core euro-zone countries like Ireland, Spain and Portugal stems from uncompetitive wage increases relative to those of Germany over the last decade. These economists see the unemployment tragedy as solved by depreciation and exit from the euro (Rogoff) or by a “real” appreciation of Germany in the form of a rise in German wages that had been in a beggar-thy-neighbour manner kept too low (Vernengo and Perez-Caldentey and Sinn). This shared view that an exchange rate change is a magic wand to banish unemployment stems from overly aggregative overly simplistic modelling in which there is only one sort of labour input (and little else) in running an economy. However labour is not as flexible as assumed in these models. To see the reality of inflexibility, take the burst of the Spanish housing bubble. It led to mass unemployment of construction workers who have no alternative skills, and thus have to look for jobs mainly in construction boom regions of Latin America where their language is spoken. This surplus Spanish construction labour cannot be transformed overnight into high tech machinists who begin their apprenticeships at age 16, even

if German wages would dramatically increase enticing high tech machine firms to expand in Spain.

The illusion of a depreciation panacea for countries with high unemployment pervades both fiscal austerity advocates of the old guard of the International Monetary Fund and its ex-members like Ken Rogoff and fiscal stimulus post Keynesians like Matías Vernengo and Esteban Pérez-Cadentey. These tragedies stem instead from a construction bubble. In turn that bubble was fuelled by a financial bubble (eager lenders like Germany's Deutsche Bank). The construction-financial bubble was of such an extent that over 20% of the entire workforce in these countries has been employed in and acquired skills only in construction, and the financial sector and its salaries similarly over-expanded. The financial sector bubble is being kept alive by government taxes propping up their bubble banks, instead of downsizing them and bankers' salaries. These are structural disasters whose remedies involve physical retraining and redeployment of bankers and construction workers into productive activity. It is only in much aggregative over-simplistic algebra that the flick of an exchange rate allows any worker in any country to become "competitive" – to generate exports – and that skips the real structural problems of how to replace bloated construction and banking sectors with productive activity and employment.

3.4 The illusion of a lower sovereign debt burden from a national currency

Data selectivity underlies the widespread view that multiple currencies are good because they avoid paying higher interest rates on government debt. According to proponents of this view such as Paul Krugman, countries with their own separate currency are immune from sovereign debt risk premia: the peripheral eurozone countries facing interest rates on rolling-over their debt have salvation at their doorsteps by exiting the euro zone.

"First, if you look around the world you see that the big determining factor for interest rates isn't the level of government debt but whether a government borrows in its own currency. Japan is much more deeply in debt than Italy, but the interest rate on long-term Japanese bonds is only about 1 percent to Italy's 7 percent. Britain's fiscal prospects look worse than Spain's, but Britain can borrow at just a bit over 2 percent, while Spain is paying almost 6 percent.

What has happened, it turns out, is that by going on the euro, Spain and Italy in effect reduced themselves to the status of third-world countries that have to borrow in someone else's currency, with all the loss of flexibility that implies. In particular, since euro-area countries can't print money even in an emergency, they're subject to funding disruptions in a way that nations that kept their own currencies aren't — and the result is what you see right now. America, which borrows in dollars, doesn't have that problem."

[Krugman, November 12-13, 2011]

A false reality is constructed by Krugman selecting special events at special times in particular countries, and ignoring the complexities of debt in a world with multiple currencies. The actual reality is that countries issuing their own currency are also at the mercy of the carry trade ("hot" cross-country money flows), and also of nasty exchange rate liquidity shocks adding to their government debt. Two examples suffice.

First, contrary to Krugman, Britain never has been safe from a sharp rise in its sovereign debt simply because it has its own £. To realise this, recall that Britain's central bank, the Bank of England on Black Wednesday in September 1992 lost £3.3billion, a loss that caused the UK government debt to jump up 12% virtually in a day! British government debt was at the mercy

of speculators; George Soros and others suddenly unpredictably attacking the currency. British government debt was at the mercy of other central banks. On Black Wednesday Germany's Bundesbank showed no mercy and failed to intervene to support the Pound and rescue British taxpayers from this massive hike in government debt. British government debt could not have had this 1992 overnight jump of 12% had there been a single global currency. The suggestion that this disaster for British taxpayers stems from peculiar factors that could not recur stems from the resoundingly econometrically disconfirmed faith in exchange rates being predictable.⁷ In short, this vulnerability to devastation of government debt from exchange rate changes remains even under the textbook example of Paul Samuelson in which government debt is exclusively held by nationals. Having separate currencies imposes on central banks the risk of losses from exchange rate changes that increase that countries' government debt in the ghastly manner the Bank of England and US taxpayers experienced in 1992.

Second Krugman should have considered his own country the US, which has its own currency, the greenback. The US government debt burden could rise overnight by more than the 12% that the UK suffered on Black Wednesday. US Treasury officials realising this routinely rush to China to try to avoid a catastrophic rise in the interest paid on its government debt by wholesale cessation of Chinese purchases of its debt.

Whether US Treasury can avoid this catastrophe remains to be seen given the black comedy between US factions concentrating on the capital account and the vociferous trade war campaigns of US factions focussing on its export and import competing sectors. The US Treasury seeks Chinese purchase of its debt, something that increases the value of the US dollar, while the US export lobby, supported by many US politicians and Ben Bernanke, the Chair of the US Federal Reserve, wants the US dollar depreciated. The associated inflammatory speeches are summarised aptly by the media with titles such as "Bernanke defends Fed monetary policy, blames China for currency tensions". These inflammatory speeches endanger international relations in general, and in particular risk China spiting the US by abruptly ending purchase of any US Treasuries.

Governments cannot avoid the tragic consequences for their central banks of unfavourable exchange rate changes causing government debt to leap. Avoiding this requires a single global currency. However, governments can substantially avoid the parlous position of the US, and the higher interest rates now being suffered by peripheral eurozone countries. They can avoid it by requiring financial institutions operating in their country to hold a suitable proportion of their own government debt. Alternatively, the European central bank could impose reserve requirements on banks, of which a proportion must reflect the sovereign debt of the regions in

⁷ See for instance the interchange between a Jonathon and Robin Pope in the commentary section of our *real world economics review* version of this paper, available at <http://www.paecon.net/PAERReview/issue59/whole59.pdf>. Jonathon had proposed that George Soros could know that the British pound would depreciate. Robin Pope delineates how this was merely a possibility from German non-cooperation, dependent on decisions of central bankers and Treasury and transnational authorities, as was the matter of the Russian rouble collapse in 1998, when George Soros lost twice what he won in his earlier pound gamble, from gambling on an IMF rescue. On the value of the national currencies, governments are at the mercy of other governments and transnational authorities, not mythical anonymous atomised "equilibrating" market forces. For a realistic theory of exchange rate determination and why exchange rates are unpredictable, see Pope, Selten et al (2012).

which they do business. This latter simple procedure was in force in Australia in the "good old days" when central banks regulated commercial banks, in ways now replaced with price incentives. Price incentives require years of fiddling to discover the right incentive, and the incentive needs further fiddling as conditions change, rendering quantitative orders more appropriate.

Indeed, there is a panoply of instruments that in the non neoliberal past governments have used to limit the interest paid on their debt, and to limit the risk of hot money speculative attacks raising that interest rate. Dropping them was a function of neoliberalist naivety. It would be common sense to either reintroduce them or create new regulations/instruments that would serve the same purpose. Richard Koo (2011) notes one simple means for Italy and Spain to skip rising interest rates on their sovereign debt: within the Euro area only residents of that country can buy its debt. As he observes, this stops the big Spanish insurance bodies buying German instead of Spanish debt. Germany opposes all the above solutions as bond buyers in peripheral Eurozone countries would withdraw from the German government bond market, pushing Germany's government interest rates high enough to damage the country's tenuous conformity to the Maastricht Treaty. It would be preferable to alter or reinterpret the Maastricht Treaty, especially in light of the matter that it was importantly German savings that deluged Spain and other peripheral countries generating their construction bubbles, while the Bundesbank, supposed to be supervising and deterring frothy lending slept. This allows better sharing of that bubble between the guilty lenders and the guilty borrowers when both contributed to the Spanish government's bank bailouts.

3.5 ignorance of the costs of central banks allowing wild exchange rate swings

Reinhardt and Rogoff (2004 p.28) praised the massive exchange rate changes engineered by Australia's central bank as beneficently equilibrating. Australia's Secretary of the Treasury, who sits on the board of Australia's central bank, agrees in that he declares the country's floating exchange rate, one of the "three pillars" behind the country's economic success, Michael Parkinson (June, 2012). In his July 2012 speech titled "The Lucky Country", Glenn Stevens, the governor of Australia's central bank saw the Australian dollar's latest sharp fall as beneficent. Exceeded only by New Zealand, Australia has the most wildly swinging exchange rate amongst developed countries. But for whom are these wild swings beneficent?

3.5.1 Appreciations

Australia's central bank initiated its policy of unpredictable appreciations of the Australian dollar essentially in the 90s with announcements about concern over inflation, and often at times when unemployment was too high and output down. It did so despite the empirical evidence that dates back to Friedman (1969) that contractions in monetary policy promptly (in a quarter) and reliably damp output. It did so despite the lack of evidence that GDP is harmed by inflation under 10% per annum, and Australia's inflation rate has been way way under that level in the entire era of a floating Australian dollar. It did so despite the evidence that also dates back to Friedman (1969) that monetary policy has no reliable impact on inflation in the absence of hyperinflation, and that any influence it has is modest with ultra long lags. Milton Friedman put

its beginning and uncertain influence at two years, while more recent econometric evidence puts it as operating only with an even longer lag, starting to influence inflation only some three years later. In short, the inflation curbing appreciations policy lacks an evidence-based rationale.⁸ What is transparent is that it needlessly jolts the economy and disrupts planning by unpredictably swivelling prices of exportables and exports and imports in relation to non-traded goods, damaging planning.

3.5.2 The Unwarranted Profit Transfers from Depreciations

The depreciations policy strand of Australia's central bank policy began accidentally. Policy makers accidentally depreciated the Australian dollar dramatically in early 1983 by not realising that monetary policy could not be loosened, as in the good old days, some quarter or so before an election so as to boost output, Pope (1987). The policy makers had imbibed too gullibly the mantra of Milton Friedman that floating gave a country an independent monetary policy. When it expanded the monetary base in December 1982 for an incoming election, the astounded finance sector asked, are you serious? Don't you know we have a floating exchange rate? The government did not retract the expansion, instead declared, yes, we have an independent monetary policy. Overnight, the country's exchange rate risk premium jumped. Australia's businesses, that through its banks had borrowed overseas massively, faced overnight a jump in interest rates – as could be seen from the jump in the pertinent interbank borrowing rate.⁹

From the second half of 1983, Australia embarked on a policy of major depreciations whenever a powerful lobby group faced a big price drop for its exports. Since Australia's exports are primarily commodities, renowned for erratic prices, this situation occurs often, though the resulting exchange rate change is unpredictable on account of the unknown influence of different lobbyists for different commodities and other concerns of Australia's central bank, eg inflation. The first depreciation was to help grain producers, and conspicuously at the time both the governor of Australia's central bank (Bernie Fraser), and the most important member of her central bank board, the Secretary of the Treasury (Chris Higgins) hailed from farming districts. The continuation of this depreciation policy may have been helped by the farm

⁸ The mis-guided policy may be sheeted to Friedman's enduring influence. Friedman, a renowned protagonist for beating inflation down, failed to digest the implications of his empirical discoveries for households, firms and governments who all need to survive in the short to medium run, and instead promulgated the view that one should support inflation fighting as the sole goal of monetary policy by focussing on the ultra long run. Milton Friedman modelled monetary in a closed economy setting, and thus entirely ignored how such a fight inflation first policy of a single central bank might wildly gyrate its exchange rate. Australia's central bank's inflation policy similarly has closed economy origins. In examining it, Nevile (1997) identifies two strands, 1) the neoliberal era's loathing of other more reliable and faster ways of dealing with inflation such as the wage freeze agreed upon by Australian unions in the early 1980s, and 2) the finance sector's anxiety that they could suffer capital losses on their bond portfolios if governments ever decided that the economy is overheated, and thus prefer to keep the economy perpetually under capacity by tight monetary policy. Central banks around the world have such a cronyism problem. One of their tasks is to keep financial markets stable, by being up on financial sector gossip, and this results in them so socialising with those in the finance sector, that they fail to distinguish between what is good for that sector and what is good for the real sector they supposedly serve.

⁹ This was not known by the then secretary of the Australian Treasury, Chris Higgins, who focussed on a three month government bond interest rate in his economic analyses (discussion when Robin Pope mentioned the overnight interbank borrowing interest rate jump in the context of Chris Higgins presentation to her masters students). Tragically, Chris Higgins died in a running race soon after, removing that avenue for her influencing those involved in Australia's exchange rate policy to factor in the cost of exchange rate risk interest premia.

background of academic Adrian Pagan, Australia's pre-eminent econometrician and exchange rate expert, formerly on the board, and with continuing contacts with it. Today however, the overwhelming informal influence on this depreciations policy is likely the renowned lobbying power of Australia's mineral sector.

It might be imagined that Australia being prone to depreciate when there is a price drop in any of the numerous commodities it produces via agriculture or extracts via mining is sensible countercyclical policy. Such however is the reverse of the truth. These industries are so capital intensive, and have lags of many years to substantially alter output. Further their wild price swings mean that their operation is conducted primarily by vast multinationals who have the financial resources to average their investments and revenues over long horizons. They average so effectively, that it has been difficult to discover any change in either consumption or investment resulting from a price change in its output in either the short or medium term, as Australia's Arthur Smithies of Harvard University discovered in the 1950s, and from it developed his permanent income hypothesis. The reality therefore, as modelled in Pope (1982, 1985, 1987) and in Pope and Selten (2002), is that depreciations provide essentially zero countercyclical demand from the commodities sector as they engage in essentially no short to medium term expansion of output nor spending – instead translate per cent for percent into windfall profits for the producers.

5.5.3 The Interest Rate Surcharge from Depreciation

Eichengreen (2009) is eager for currency wars of competitive depreciations to boost demand. Australia frequently has taken this path, apparently unable to learn from the aftermath each time, of reduced demand, de-industrialisation (Pope 1981, 1984, 1985, 1987, 2013), Pope and Selten (2002). Not only have the frequent big depreciations not boosted demand, but they have imposed long term borrowing costs. Australia (like New Zealand) has faced depreciation risk interest rate premia (surcharges) relative to other rich democracies pushing its interest rates 4 to 10 times above those of other rich democracies. Reinhardt, Rogoff, and those today at the helm of the Australian government's exchange rate policy, might thus be interpreted as declaring that Australian (and New Zealand) businessmen benefit from paying 10 times what German and US businessmen pay in interest on their loans. Small wonder business people involved in international trade deem that economists who praise volatile exchange rates lack connection with reality.

The reality is rather that, like most economists, Reinhardt, Rogoff, and those today at the helm of the Australian and New Zealand governments' exchange rate policies are unaware of the actualities of borrowers suffering higher interest rates because of exchange rate uncertainty. That interest rate surcharge may be termed the exchange rate risk interest premium. Business association attempt to bring to the attention of pertinent central bankers these horrific exchange rate risk interest premia that arise from wildly swinging exchange rates but fail. This is because central bankers and treasury officials lack a model in which exchange rate risk premia happen – they were educated in effect through the international economics text of Maurice Obstfeld and Kenneth Rogoff (1997). The text is an essential pre-requisite for an education as an international macroeconomist. Uncertainty is introduced, only about half way through the text, and then as if there were a single global currency for traders in goods, services and capital. The costs of

exchange rate uncertainty are left out, including the higher interest rates resulting from exchange rate risk premia suffered by borrowers. They have to be left out to allow the graduate student to grapple with tractable maximising problems within expected utility theory (that itself is risk-free as regards experiences of agents in chronological time, Pope (1985), Pope and Selten (2010/2011)). The damage to international economic policy from economics graduates being diverted to non-real world problems of imaginary maximising agents is further explored in Pope and Selten (2011a).

The interest rate surcharge arising from exchange rate risk premia is a major component in the borrowing costs of businesses that primarily borrow overseas under US dollar denominated contracts. From the mid 1970s, businesses started borrowing abroad extensively with the advent of the recycled OPEC petro dollars. But ever since the nasty shocks of the doubling of the US dollar in the early 1980s sent many businesses bankrupt, these loans have carried depreciation risk premia.

Businesses borrowing include those located in Australia and New Zealand. The Australian and New Zealand dollar (NZD) are ultra volatile relative to the US dollar (USD), and so are the concomitant depreciation (of the NZD against the USD) risk premia. These businesses pay interest charges that are not by 1%, not by 10%, not by 100%, but, since the early 1980s, frequently 4 to 10 times that paid by many rivals without these businesses' real sector activity being discernibly more risky than that of their competitors in Germany, the US, Japan and so forth. See eg Hawkesby, Smith and Tether (2000), Douglas and Bartels (2002).

3.6 the missed ramifications of admitting that exchange rate movements are unpredictable

This massive risk premium (interest rate surcharge) might conceivably be a price worth paying if the beneficent equilibrating effects of exchange rates outweighed these costs. If exchange rates equilibrate so beneficently as to outweigh costs like higher interest rates, there must be fundamental supply and demand factors that have massively desirable impacts, and zero depreciation risk premia on interest rates. However, as surveys from the early 1980s, up to those in this millennium such as Charles Engel, Mark Nelson, and Kenneth West (2007) note, forty years of econometrics has failed to discover any out of sample equilibrating fundamentals whatsoever – unless the sample points are extended beyond policy relevant time spans (something predictable within three years). In turn, this leaves unpredictable any country's depreciation risk premium.

In short, all exchange rate changes and thus all the exchange rate risk premia piled on interest rates, are unpredicted. No pertinent supply-demand fundamentals have been discovered – not the trade balance, not government debt, not private debt, not inflation rates, not interest rates, not commodity prices, not terms of trade, not the liberalisation extent of financial markets, not the extent of central bank intervention in the exchange rate, not the extent to which the country receives accolades from the IMF or “good governance” or “transparency” awards. No change in any of these investigated supply demand fundamentals predictably alters exchange rates in any policy relevant time frame: the tale of beneficial equilibration from exchange rate changes is thus resoundingly empirically disconfirmed. So too is resoundingly disconfirmed economists'

fond belief in there being virtually costless ever-available means for agents to insure against exchange rate changes and be immune from these exchange rate risk premia.

3.7 False Correlation Arguments

Confronted with this disconfirmation, some economists switch to the empirically false statement that exchange rate changes do not need independent analysis since they are correlated with inflation, eg Qian, Reinhardt and Rogoff (2010). Consider the two most recent major exchange rate crises affecting much of the world, that of South East Asia in 1997 and that of the abrupt rise in the US dollar before sufficiently widespread central banks swaps were initiated in late 2008. Both occurred in periods of low or falling inflation, and caused drastic damage. In short the arguments that exchange rate and inflation changes correlate to such an extent that it is superfluous to study exchange rates, and the associated implication that exchange rate changes cause no more damage than inflation and so can be studied as if there were a single global currency, is wishful thinking.

3.8 Use of irrelevant price relativities

On other occasions the same economists declare that there is no need to study exchange rate changes since these are harmless. Their reasoning is that even after massive unpredicted exchange rate liquidity shocks, the relative consumer price indices of countries change little, e.g. Rogoff (2001). This is to focus on the wrong price relativities. Consumer price indices comprise non-traded goods. What exchange rate changes do is to jolt international goods, services and capital flows, and to massively and arbitrarily redistribute international wealth.

In goods and services, the pertinent price relativities are between competing local and foreign traded goods prices. Once the focus shifts to these, the damage becomes apparent. To give but one example, depreciations have wiped out much or all of the import competing manufacturing sectors of many OECD countries, Pope (1981, 1985a, 1986, 1987, 1992); Pope/Selten (2002); Sheets (1993: Ch.1). Thereby these depreciations are responsible for part of the damaging structural upward shift in the unemployment rate in advanced economies. This began occurring in the early 1970s, and slowed growth in many advanced countries in the later 1970s, the 1980s and in some also in the 1990s.

Rogoff's focus on consumer price indices ignores how exchange rate movements randomly, arbitrarily, inefficiently:

- shift wealth between countries,
- send businesses and governments broke,
- generate massive losses for taxpayers, and
- divert scarce high talent away from the real sector into the foreign exchange component of the financial sector whose services would be irrelevant without variable exchange rates.

3.9 Examples of the Devastation Caused by Exchange Rate Movements

A few examples paint the picture of these unpredictable nasty shocks caused by exchange rate changes. Those selected are from the period after the demise of the Bretton Woods pact for exchange rate stability, and the concomitant demise of steady growth in rich democracies.

Example 1

There was the tripling of the price of oil twice in the 1970s as Arab retaliation against the US for siding with Israel in the Sinai war. This resulted in a massive multi-billion transfer in wealth to those in the OPEC cartel, who, unable to instantly spend it all, delegated it to US banks who recycled the wealth in the form of exchange-rate unhedged petro-dollars loans, primarily issued on three month rollover basis, a most profitable way of issuing the loans from the viewpoint of the US banks who netted a new fee every three months. In a retrospective understatement, Paul Volcker observes in Volcker and Gyohten (1993) that it is unclear that such short-term loans were in the general interest. Rapid rollover debts are unmanageable for borrowers if either interest rates or exchange rates shift adversely and unpredictably. The upshot was that the unpredicted doubling of the US currency's value between 1982 and 1985, doubled rollover debt interest repayments for most borrowers outside the US. The doubled rollover debt repayments created extreme hardship even in advanced economies, and sent much of the Third World into bankruptcy. When borrowers had repayment difficulties, the IMF did not to save the real economies in the first and third worlds, but the New York financial sector.

Example 2

In the early 1990s, the UK central bank and taxpayers suffered the catastrophic Black Wednesday pound depreciation of 1992 that in 1997 the UK Treasury estimated the cost of Black Wednesday at £3.4 billion.

Example 3

The 1997 East Asian crisis made for devastating depreciations that wrecked the very economies that had been declared as model in their behaviour by the IMF a few months earlier.

Example 4

The East Asian crisis aided in the collapse of the rouble the next year. The utterly unanticipated collapse of the Russian rouble devastated Wall Street and massive hedge funds. George Soros lost in the entire catastrophe twice what he had made in speculating six years earlier against the British pound. The systemically important giant hedge Long Term Capital Management (LTCM) was unable to pay its lenders, the big investment banks. A disorderly collapse, risking the sort of financial implosion actually experienced about a decade later, was only averted by Peter Fisher of the US Federal Reserve Board's New York branch pressuring the big investment banks to enable its collapse to be fairly smooth, Lowenstein (2000, 2010).

Example 5

The abrupt rise in the US dollar followed the collapse of the dotcom bubble and thus the collapse of the scope for international borrowers to rollover their US debt. This abrupt rise of the US dollar put giant multinational real sector firms like Pasminco into administration with its losses at \$2.1 billion by July 8, 2002.¹⁰ It also caught the Australian Treasury, whose interest swap deals had been premised on the Australian dollar rising, when in fact the dotcom liquidity crisis meant that instead it was the US dollar that rose dramatically, leaving the Australian taxpayer with the risk of extreme losses. The practice of the Australian Treasury so gambling

¹⁰ Fitzgerald (2002) reporting on the float attempting to avert larger losses that was being handled by Deutsche Bank, Salomon Smith Barney and UBS.

and losing was thereupon essentially outlawed by the Australian Office of Financial Management that, to avoid too massive a depreciation of the Australian dollar, determined that this exchange rate gambling be unwound slowly, up to 2008.

Example 6

In the recent global financial crisis that began in late 2007 and that is far from reliably over, there was a narrowly averted global financial and real sector meltdown. It was averted through inter-country cooperation, central bank currency swaps that stopped the rise in the value of the US dollar (that many key currencies faced by the time of Lehman's disorganised collapse), because debts denominated in US dollars could no longer be rolled over. Without these central bank swaps there would otherwise have been an unmanageable soaring in the value of the US dollar, Pope and Selten (2011a, 2011b).

4 THE CONTINUING GLOBAL MELDOWN RISK FROM EXCHANGE RATE CHANGES

None of the damage from exchange rate changes listed in any of the above six examples is in the vision of the average economist. It is unsurprising, therefore, that economists – even those who engineered the stabilisation of the value of the US dollar in the US Federal Reserve – missed the economic salvation generated by the central bank swaps. Indeed the US Federal Reserve missed the exchange rate signals of the beginnings of the crisis on account of the endemic closed economy modelling practised by central banks. Thereby they lost almost two years of opportunities for commencing compensatory action.

The US dollar started appreciating markedly from late 2005 as difficulties were experienced with house mortgage repayments, resulting in reduced scope for foreign firms to rollover their US debt, much of which was US dollar denominated. But the causes of this rise in the demand of US dollars went unremarked largely by the US Federal Reserve Board. Its staffers instead used only closed economy indicators. These yield an onset date almost two years later, too late for gentler remedial action. Thus, the onset of this millennium's financial crisis is dated by the US Federal Reserve Board's New York staffers Michael Flemming and Nicholas Klagge (2010) as only beginning in early August 2007, when interbank lending contracted sharply; the contraction followed the release of information that key hedge funds of a big foreign bank were in trouble.

In response, by December 2007, in conjunction with the US Treasury, Ben Bernanke had instituted TAF, the Term Auction Facility, to aid US banks, and those foreign banks with enough deposits/collateral in the US. To help foreign banks ineligible for TAF, and to reduce the use of US taxpayer money to help eligible foreign banks, at essentially the same time, mid December, with the consent of the US Treasury, the chair of the US Federal Reserve Board's negotiated swap agreements with the European Central Bank and the Swiss National Bank, and successively raised the amounts. Compared to late 2005, by mid 2008, the US dollar had already soared 30% against the euro and some other key currencies as increasingly borrowers were unable to rollover their international debts that were mainly denominated in US dollars. The measures were thus insufficient initially to help foreign borrowers, but began to be effective in reversing the US dollar shortage.

Within a month of the collapse of Lehman Brothers in September 2008, yet more foreign banks located in many countries were knocking at the US Federal Reserve Board door for help. Ben Bernanke expanded the dollars available through the swaps agreement by nearly a factor of 10, including by brokering swap deals with the central banks of most in the developed world, and soon after, with some in the third world. The upshot was a removal of the US dollar shortage - of an allowed reversal of exchange rates to their pre-crisis level within a couple of months. These central bank swap agreements thus averted something far worse than the unpredicted doubling in the value of the US dollar that occurred in the early 1980s. But the US Federal Reserve Board averted this exchange rate rise catastrophe *accidentally* in its efforts to have foreign banks stop pressing it for liquidity at the cost of US taxpayers.

The US Federal Reserve Board felt it must be an impartial supplier to US and foreign banks of liquidity in the emergency since the foreign banks threatened that otherwise New York would lose its status as an international financial centre. Ben Bernanke, however, could anticipate the political ire that would erupt four years later from freedom of information revelations of US taxpayers bailing out foreign banks. For further details, see Pope and Selten (2011a and 2011b). TAF (available to some foreign banks with US subsidiaries) and central bank swaps (available in due course to most foreign banks) removed this exchange rate pressure during the height of the crisis. Within a month of the Lehman Brother collapse, in the case of the euro, and for some other currencies by early 2009, the swaps had resulted in a reversion in the value of the US dollar to its pre-crisis level.

The salvation brought about by averting a drastic rise in the US dollar is pivotal. This salvation, this averted exchange catastrophe. It has been sidestepped by inquiring (in a closed economy setting ignoring exchange rates!) whether these central bank swaps damped interest spreads, and like questions! Massive sectoral and inter-country damage arises from these exchange rate changes themselves. The fundamental issue is how the central bank swaps cooperatively moved exchange rates in the critical crisis months, and how quickly many central banks reverted afterwards to uncooperative beggar thy neighbour depreciations.¹¹ As the foremost cause of massive damage in international flows of goods, services and capital,¹² *unpredictable* exchange rate changes arising from central bank conflicts need to gain centre stage before any debt tipping estimate is informative. Further, future exchange rate changes also affect growth. But as detailed in our central bank conflict cooperation theory, Pope, Selten et al (2012), these will remain largely unpredictable. This is due to the extreme difficulties in predicting the personal and political interactions underlying central bank cooperation and conflict. This inherent exchange rate unpredictability in turn puts limits on how informative econometric government debt tipping estimates could ever become, and the urgency of policymakers recognising the current risk of a global meltdown from exchange rate changes, as occurred in the 1930s.

¹¹ Thus as the crisis receded, Linda Goldberg, Craig Kennedy and Jason Miu detail how many central banks selected less competitive rates at which provide the US dollars available by the swap arrangements, while the teams of Joshua Aizenman and others, note that many countries in due course depreciated against the US dollar despite still having central bank swap facilities. Naohiko Baba (2008) and Baba, Frank Packer, and Teppei Nagano (2009) detail the turmoil in forward exchange rate markets from borrowers being unable to roll over their debts in the wake of the financial crisis.

¹² Other factors impinging on growth such as housing and credit cycles are in comparison to exchange rates, predictable. Further these other factors are far steadier per period of time in their progressions up and down than are exchange rates. Models assessing the effectiveness of central bank swaps typically omit the exchange rate as a determinant as if there were not a set of central banks doing the swaps!

5 THE 1930S

The Wall Street crash of 1929, meant that country after country left the gold standard and depreciated, accompanied by a virtually freezing international capital (such that even today, international capital market are less integrated than early last century), and a devastation of trade flows. Employment in the two big countries most devastated, the US and Germany, was restored by redistribution of income away from the very rich, and by preparations for, and participation in, a world war.

As regards the US, Robert Gordon and Robert Krenn (2010), however, document that it was only 18 months before Pearl Harbour (almost mid 1940) that armaments build-up became a massive fiscal stimulus in the US, citing reports such as the below:

“National Defense has become the dominant economic and social force in the United States today. It has created a new industry – armament – the ramifications of which will reach into every phase of our business life, and bring increased employment, higher payrolls, widening demands for machinery, and the construction of new factories.” *Business Week* June 22, 1940

The result of delayed and inadequate fiscal stimulus was that in 1939, in the US the number unemployed was still around 6 times that of 1929, whereas by then Hitler had reduced Germany's number of unemployed to 1/10th of its 1929 level. See Tables 2 and 3. Indeed it can be seen from these two tables that the US only reduced its number of persons unemployed below what it was in 1929 by 1943. With demobilisation (fiscal stimulus withdrawal), by 1946, the US rapidly suffered a trebling in its number of unemployed.

Table 2 Hitler elected 1933
thousands unemployed

	US	Germany
1929	1,550	1,899
1930	4,340	3,076
1931	8,020	4,520
1932	12,060	5,575
1933	12,830	4,804
1934	11,340	2,718
1935	10,610	2,151
1936	9,030	593
1937	7,700	912
1938	10,390	429
1939	9,480	119

Table 3 War then Demobilisation
thousands unemployed

	US
war	
1940	8,120
1941	5,560
1942	2,660
1943	1,070
1944	670
demobilisation	
	US
1945	1,040
1946	2,270

Sources: <http://www.dhm.de/lemo/objekte/statistik/arbeits11b/index.html>;
<http://www.census.gov/statab/hist/HS-29.pdf>

For the US, therefore, it took the additional military fiscal stimulus of the early 1950s Korean war to reduce unemployment back to its 1929 level. For the whole world, it took into the 1950s for the Bretton Woods exchange rate stabilisation agreement to start thawing trade and capital flows.¹³ The 1930s and 1940s thus reveal that it is dangerous to wait for productive private sector activities to fill the vacuum that is left by a burst bubble. It is safer to adopt fiscal stimulus packages enhancing society through financially disinterested research, better health, infrastructure, education, and natural environment.¹⁴ It is unsafe and unproductive to fill the vacuum as in the 1930s – with armaments.

Governments moreover are often too timid to undertake such socially and globally productive public sector investments. Governments have an excessive tendency to believe that they cannot get re-elected if they attempt to solve unemployment by long term badly needed productive investments – that the population only endorses government expenditure on arms, the only exception to small government granted by neoliberalism. This fear is exaggerated, and can be false, as Glenn Withers and David Throsby (2001) discovered. They interviewed Australian voters on which government programmes they sought to have expanded and which contracted, in each case showing them the implied increase or decrease in their taxes to keep the budget deficit stable. Voters wanted an increase in spending on the environment, health and some forms of education and expressed willingness to pay for it. Voters at the same time wanted a decrease in military expenditures.¹⁵

As regards exchange rates, the horrors of the 1930s floats led to the Bretton Woods Agreement on exchange rate stabilisation. Since that agreement's breakdown, a gulf has arisen between the real business sector suffering the horrors of exchange rate changes as in the 1930s, and academic economists who have become increasingly distanced from the real world, increasingly mesmerised by algebraic derivations. The gulf has arisen because the effects of exchange rate changes, in their multiple real and financial sector ramifications, are quite beyond the scope of algebraic and econometric techniques that have increasingly driven economists' analyses. What lies outside this scope is invisible to the modern economist, as can be seen from the six glaring examples given earlier in this paper of disasters from exchange rate changes that are outside the average economist's vision. The next section seeks to restore economists' eyesight in this regard.

6 THE MERITS OF A SINGLE GLOBAL CURRENCY

The ramifications of multiple currencies are far too complex to be captured by maximising assumptions underlying the modern economists' algebra and associated estimating equations.

¹³ On the benefits of fixed exchange rates under this agreement to trade, see eg Klein and Shambaugh (2006).

¹⁴ It will be safer yet if all non-environmental forms of fiscal stimuli are devised with an eye for not further damaging the environment as it is endangered through past growth from unprecedented population growth and other factors.

¹⁵ See also Withers and Edwards (2001).

Their complexities can be captured to a greater degree in highly complex laboratory experiments. Such experiments can allow for the effects of personalities and their dynamic interactions, for the multiple different sorts of private and public sector agents involved in exchange rate determination. The experimental method avoids the necessity of making unrealistic behavioural assumptions for the sake of tractability such as maximising expected utility agents.

Complex experiments point to better macroeconomic management, with a statistically significant improvement in the maintenance of international competitiveness, with a single global currency, Pope, Selten, Kube and von Hagen (2008), Pope, Selten, Kaiser, Kube and von Hagen 2012. A single global currency can end the current risks to the US from switches in demand away from its currency to alternative currencies, the actual major risk for the US debt hampering the country's growth. The single global currency can in addition end economists making *unconscious* beggar-thy-neighbour exchange rate proposals that endanger economic cooperation, Pope (2009a).

The benefits from a single currency were recognised in the cases for currency unions of Courchene (1999), Courchene and Harris (1999), Grubel (1999), Grimes et al. (2000, 2001), Rose (2004) and Cooper (1984, 2006). They were also recognized in the cases made for a single global currency made in the wake of the East European and Asian currency crises of the late 1990s by numerous financiers, economists, politicians and journalists and journals, by the *Economist*, by Mundell (2003), by Bonpasse (2006), by Teichrib (2008), by the Russian prime minister in his currency speech at the G8 meetings of (Media Resources) 2009, by the International Monetary Fund (IMF)'s Strategy, Policy and Review Department under Duttagupta et. al in its *Reserve Accumulation and International Monetary Stability of 2010*, and by the United Nations Conference on Trade and Development in its *Trade and Development Report 2010*. The benefits from a single currency also connect to the proposal for a world central bank forwarded by Peter Turkson and Mario Toso (2011) for consideration at last year's G20 conference, at which, dangerously, exchange rate cooperation – let alone the security of a single global currency – did not get even the degree of attention it had two years earlier.

7 CONCLUSIONS

This paper has delineated the benefits to employment and growth from policies of: 1) fiscal employment stimuli during downturns; 2) introducing a single currency and 3) higher income and wealth tax collection from the wealthy. The paper has additionally detailed means of insulating substantially government interest rates from the vagaries of hot money flows, since fear of rises in government interest rates can deter governments from 1) – from providing fiscal stimuli during downturns. These insulation devices were in force in essentially every country until the 1980s during which financial institutions cajoled governments into eliminating them. The benefits to growth, law and order and democracy from shedding the bubble (cancerous) components of private sector prescription drugs and financial activity, are presented in our companion paper.

The case here presented for a single global currency and the dangers of continuing with multiple currencies runs counter to the widespread belief of economists that a country facing a downturn

may be better off if it has its own national currency and depreciates it. The paper identified eight mistakes in how economists selectively use data and excessively aggregative simple models to argue for depreciations, and in how economists then overlook the extreme damage caused by exchange rate changes and the risk of such changes. Selecting appropriate directions for flows of real resources and capital is complicated and risky enough without economists advising that it be made unmanageable by having multiple currencies! When economists add this extra layer of complication, the system has become too complicated to tractably model algebraically. Some things have to get ignored. Economists bring in their multiple currencies at the cost of skipping the difficult real sector resource questions, like how to emigrate surplus construction workers and construction equipment to the few spots in the world having a construction boom, or retrain them. Doing that seriously in a policy relevant way would make the elegant algebraic model inelegant and intractable. To retrieve both, economists across the spectrum (from old guard IMFers like Rogoff, to post Keynesians like Vernengo and Perz-Cadeteny) simplify. Their models treat all labour and equipment as malleable so that if a country has them unemployed, these resource can be instantly shifted into competitive efficient export activity by the country engaging in a (real) depreciation.

The case here presented for employment oriented fiscal stimuli amounts to a case for ignoring the contrary inferences drawn from government debt tipping point studies on the grounds that those studies employ estimating equations that are mis-specified in several serious respects. They are mis-specified in that they ignore three of the biggest dents in growth over the last forty years, those from drastic unpredicted exchange rate jumps, and from the bubble components of the prescription and financial sectors. They are mis-specified in that they ignore the big differences between different sorts of fiscal stimuli as regards their speed and size. They are mis-specified in that they are too aggregative to even discriminate between increases and decreases in fiscal stimulus and get the direction of causation right. Did *increased* fiscal stimulus *cause* high debt and low GDP? Or did *reduced* fiscal stimulus *cause* high debt and low GDP? One cannot tell by looking at the aggregate, government debt. It is often simple to tell if one goes beyond looking at the aggregate, debt, and looks at its components to ascertain if taxes went up or down, and why, and if government expenditure went up or down, and why. When tipping point estimates fail to do this, they get the causation in a sizable proportion of the variables in their equation back-to-front.

Getting the causation back-to-front renders government debt tipping estimates a disaster for policy, if acted on. Reinhart and Rogoff's equation has this back-to-front problem. Its estimating equations, when used to assess fiscal stimulus, say that *increased* fiscal stimulus resulting in the *high* US government debt to GDP ratio of about 90% is what *caused* the downturn in US GDP after world war 2. In reality, *reduced* fiscal stimulus from demobilisation, is what caused GDP to drop that in turn caused tax revenues to drop and (by accounting identity), government debt to rise.

Such mis-specified government debt tipping point equations that even embed chunks of data where the causation is back-to-front, should not influence policy. Attention to them deflects policy from the immediate danger in the current crisis, an unmanageable melt-down due to an exchange rate shock. It also deflects attention from the longer term danger of a full breakdown

in democracy, a major war, dictators in developed countries through governments failing to tackle income inequality and unemployment through appropriate tax enforcement, tax changes and societally and economically enhancing fiscal stimuli.

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