Deficits, Debts and Defaults - Past, Present and Future
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Abstract: this paper explores the issue of whether rates of interest should and do tend to exceed rates of growth, a key determinant of debt sustainability. It goes on to consider the argument for debt renegotiation in circumstances where sustainability is in grave doubt.

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Delinquency means failing to pay due interest on debt. A delinquent is technically in default on a contractual obligation. So this brief foray into the history, principles and possible future of default will apply the word broadly, to include everything from outright repudiation to rescheduling, agreed with creditors, of the obligations of a sovereign. This paper begins, in section 1, by reviewing the popular rate of interest – rate of growth gap as a test for a sovereign’s fiscal sustainability. It then turns, in section 2, to consider how generous rescheduling should be to the delinquent borrower, if the market participants are pessimistic enough about his debts to force loan renegotiation. The paper blends some analysis of key issues with a short survey of relevant literature, some of it old and some new. Some concluding observations are offered in section 3.

1. Fiscal Sustainability

A necessary condition for sovereign debt default is that either the debtor, or the creditors, or both groups, think that there is a substantial chance that the sovereign’s fiscal position will become unsustainable. The link between debt distress and fiscal challenges is central, and widely reflected in the academic literature. Uribe (2002) is a prominent example. Here a strong case is made out against procrastination in responding to them: delay is costly and can create instability. Citing Ceaucescu’s Romania, and other instances the other way, Carmen and Reinhart (2009) argue that default turns most on the debtor’s perception of fiscal unsustainability, and his unwillingness to pay - and more than his inability to pay. It might be argued, however, that the distinction between inability and unwillingness to pay resembles that between voluntary and involuntary unemployment: stark but fuzzy words, not easily modelled. The debtor’s opinions of what is sustainable clearly matter greatly. Yet often it is the creditors, actual or potential, who take fright about the sovereign’s ability to repay, and drive up the risk premium on those of his existing debts that are about to be rolled over, in advance of a suspension of due interest. Fear can very quickly become self-justifying.

The ratio of a government’s debt stock to the annual flow of its national income will keep growing when the rate of interest on that stock (call it \( r \)) exceeds the growth rate of income (\( g \)). This condition can be expressed in terms of nominal or real rates of growth and
interest, provided they are consistent. It is something of a simplification. For example, it may omit seignorage (a sovereign’s revenue from taxing currency) and the impact on real debt charge flows from unanticipated changes in the price level. It also assumes that the government’s non-interest outgoings balance all its non-interest receipts exactly, so that the sovereign borrows to finance payments of interest due – the primary balance is zero; and further, that key fiscal parameters and ratios remain fixed. And it begs questions about the term structure of the relevant interest rates and the duration over which growth is calculated or projected. Cochrane (2011), Krejdl (2006) and Polito and Wickens (2005) provide examples of illuminating analytical or practical treatment of some of the numerous niceties involved.

There are also definitional problems: central government - or “general government”, which includes lower tiers? Where do nationalized industries come in? Or unfunded pension liabilities? Or other obligations off balance sheet? Or should it be the authorities’ net obligations, once the estimated value of public assets is subtracted? Despite all these questions, however, the $g>r$ condition clearly encapsulates the essential idea, deeply ingrained into popular discourse today, that, if this inequality is reversed, debt will outpace the ability to service it.

Default is an escape route from an increasing debt-income ratio. And also from a debt-income ratio that is simply too high. We may call these conditions direction unsustainability and level unsustainability respectively. They are analytically distinct, but intertwined. The former generally implies that the latter at some future point. And a high current debt level may not generate concern if it is expected to drift down over time, in relation to national income.

One difficulty in deciding whether a country’s fiscal position really is deteriorating, already glimpsed above, concerns the fact that $r$ and $g$ should really be taken as long run expected average rates, and not as current actual rates (or near future expected rates). The two variables should see through the humps and bumps of the business cycle. But future average rates are subject to much uncertainty. This points to the merit of exploring what theory and history have to tell us about the relationship between them. That is what the next two sub-sections attempt to do.
1.2: The Theory of $r$ and $g$

First, theory. Probably the ideal micro-founded starting point would be the Ramsey (or Ramsey-Cass-Koopmans) model of immortal optimizing agents in its simplest, continuous time form. Here the (real) growth rate of income converges on the sum of the rates of population growth (call this $n$) and the rate of Harrod neutral technical progress (call this $x$), taking these as exogenous.

Finding out what the (real) interest rate will be in the long run in this context is a little trickier. Suppose utility is isoelastic in consumption, with the relative risk aversion coefficient constant at a value of $a$. Suppose utility is discounted exponentially at a given rate of impatience, $b$. Suppose that agents’ felicity maximands multiply the utility from consumption per family member by the number of family members, raised to the power $h$, and that this number rises in proportion to the total population. Suppose, finally, that governments have the good sense to apply a Kaldorian expenditure tax\(^2\), or a Lucas ban on capital income tax\(^3\). Either of these will eventually remove any intertemporal distortion that discourages saving. These conditions imply that the long run real interest rate will be $b+ax+n(1-h)$. It is quite common to assume $h$ away, and it is not just usual, but almost universal among economists, to assume that $b>0$ and also that $a$ is not less than unity. Under these conditions, $r-g$ settles down to become $b+(a-1)x$, which can surely only be positive.

Introducing intertemporally distorting tax rates does not affect the relevant interest rate/growth rate condition directly, because it is the net-of-tax rate that matters for the authorities’ budget (at least when bond interest is subject to income tax like any other flow of income). But it will affect level sustainability in the long run: income tax on both wages and profits, for instance, with no exemption for net investment, will imply a lower long run level of income than would be observed without it. It is just possible that raising the rate of

\[^2\text{As espoused by Kaldor (1956).}\]
\[^3\text{See Lucas (1990).}\]
income tax could therefore reduce long run tax receipts, and thus undermine level sustainability\(^4\).

The implication thus far is clear: any stationary positive primary budget deficit is likely to be direction-unsustainable. A primary deficit can only be temporary, awaiting reversal. Otherwise it will simply continue blowing up. And extensions to endogenous growth, where \(x\) (and / or possibly \(n\)) are solved out as variables in a model, as for example in the models of Romer (1990) or Aghion and Howitt (1998), will usually keep \(r>g\) as well, given the Ramsey equation \(r = b + (1-h)n + ax\) and the restrictions that \(b>0, a>1\) and \(hn\) be small.

An uncomfortable feature of the Ramsey model is that agents are immortal, or at least behave as if they are. Blanchard (1985) amends it to introduce random, exponential mortality, with an absence of bequests. The effect of this is generally to increase \(r\): if you don’t care about your heirs, and aren’t sure you will survive into the next period, saving is simply less attractive, and that will mean that capital could only tend to become scarcer.

In the simpler Diamond (1965) model with production, where people live for two periods, working when young and then retiring, it can happen in some extreme cases that \(g>r\) in the long run. But when restrictions on preferences and production are applied, to ensure that a long run equilibrium exists, is unique, and is stable, one will find that \((r-g)/g\) must ultimately converge to something not very far from plus one\(^5\).

The direction sustainability condition \(g>r\) has other weird features. It conflicts with the important notion of dynamic efficiency. It implies that an equity claim on a dividend that keeps pace with national income has a more-than-infinite discounted present value: the series for valuing the dividend stream will not converge. And it is in conflict with the principles for optimality in consumption discussed in Arrow et al (1994).

1.2 Some history of \(r\) and \(g\)

What about history? The 35 or so years after 1945, when previous franchise extensions and the exigencies of war had led to politicians usurping the levers of monetary policy in most countries, give ample evidence that, in most OECD countries and by most definitions, 

\(^4\) Under simple conditions, this could happen in the long run if the income tax rate exceeded about two thirds.

\(^5\) Assuming that preferences over consumption at the two different stages of life are symmetric, and that labour receives about two thirds of national income.
growth did in fact exceed interest on average. The decade or more of the great moderation, centred on about 2000, provides another example. But the fifteen years or so that begin with Volcker’s attack on inflation generally go the other way, and by some margin most years in the UK and the US. This is especially so when it is long rates, not short rates, that are compared with \( g \).

Going back further, in the interwar years we see the \( r-g \) gap bobbing about quite violently, and varyingly between countries, typically around a mean of approximately zero (though this varies somewhat depending on the choice of maturity structure, and on definitions of inflation). But now consider the UK in the century between Napoleon’s exile to Elba and the assassination of Archduke Ferdinand in Sarajevo. The average annual rate of inflation over that century, as in the previous two in England, was approximately zero. The average annual nominal rate of interest on long term UK government debt was about 3.5%: on consols, it averaged 3.44% between 1815 and 1914. The annual growth rate undulated around an average of little more than 2% (real GDP at factor cost rose fivefold on Feinstein’s data between 1830 and 1914, implying annual growth of 2.01%). So on balance, we may conclude that for most of the last two centuries, there is something of a general tendency in Britain, on most definitions, for interest to exceed growth.

This is strong evidence against the complacent view that deficits are typically sustainable. It also provides another important lesson. The ratio of National Debt to annual national income after 1815 appears to have reached about 250%, far above any of the OECD countries today, even Japan. Yet Britain did not default, either unilaterally by suspending interest, or more subtly through the sly mechanism of surprise inflation.

How are we to explain this seemingly inconsistent evidence? Monetary factors are clearly relevant. Surprise inflation is a gentleman’s default on debt: countries able to issue unindexed debt denominated in their own currency, with non-trivial maturities, have this option. That is an escape route from fiscal challenges that only advanced countries, with sophisticated financial markets and reasonably credible monetary authorities, will normally be in a position to enjoy. (And even fewer can enjoy the luxury of defrauding overseas holders of such debts through surprise depreciation of the exchange rate). Hanoverian, Victorian and Edwardian Britain could have deployed these ruses. But she did not.
In the early post war decades, however, the US, the UK, France and several other economies witnessed creeping, and then slowly accelerating inflation, with nominal interest rates lagging some way behind. Politicians’ enlarged influence over monetary policy instruments will have gradually created an inflation bias, similar to that described by Barro and Gordon (1983), with the underlying incentive for the bursts of surprise inflation coming at least as much from the opportunity it gave to lower the debt-income ratio, as much as from exploiting the short term Phillips curve.

A surprise cut in the debt-income ratio is not just a transfer from (current) bond holders to (current and future) tax payers. In practical terms, it also permits a reduction in distortionary tax rates, like income tax. This can provide a first order net gain in potential welfare; at least it allows such tax rates to be lower than they would otherwise be. And in the mid twentieth century people remembered the long centuries of (almost) zero peacetime inflation, and took quite a time to recognise the new political economy of taxation through inflation. Another net gain for output and potential welfare in the early postwar decades, which added temporarily to \( g \) but not much (if at all) to \( r \), came from dismantling the large restrictions on trade and international factor movements that had accumulated from the earlier wars and slump.

The easy monetary conditions that had persisted in the mid and late 1970s were reversed by Volcker in the US. Interest rates yoyoed around, and jumped, sharply; real interest rates went from negative (on many definitions) to unambiguously positive values, which, as we saw, tended to exceed real growth rates. One effect this had was to drive many Latin American sovereigns suddenly into default. They had borrowed US dollars short, at initially low nominal and negative real rates in the mid and late 1970s. As Heffernan (1986) shows, Volcker’s policy change, however welcome in other ways, was to have the side effect of contributing to the factors triggering that massive rescheduling. The sovereign borrowers had not insured themselves by borrowing at longer maturities, perhaps for the good reason that the lenders had been too wary to allow that\(^6\). On top of that, the US dollar quickly appreciated in nominal and real terms against many of their currencies.

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\(^6\) Uribe and Yue (2006) attribute about 20% of the fluctuations in emerging economies to US interest rate shocks.
The failure of \( r \) to match, still less exceed, \( g \) in the generality of the Great Moderation years may be attributed partly to the disinflationary and (broadly) growth-promoting effects of OECD countries’ low-priced imports from Asia, but also to what appear in retrospect to have been misguided expansionary monetary policy, especially in the years 2001-4. Weak inflation, and responses to 9/11 and the dot.com crash, kept key US policy rates at or close to 1% per year. This injected the equivalent of perhaps 800 basis-point-years of monetary stimulus into the world economy. US monetary policy rates sometimes move abruptly, as they did downwards in 2001; and sometimes they follow the Woodford’s injunction\(^7\) that changes should be spread out in numerous little steps. But in the current century, Woodford’s rule is obeyed for rises, and too often dramatically disobeyed downwards. This gives the time-averaged stance of monetary policy a perilously expansionary bias.

Towards the middle of the past decade, “Flexprice” goods, such as copper, gold, oil, equities, and bonds displayed pronounced and continuing increases in price (and all the more because the “fixprice” goods took time to adjust); real estate boomed alarmingly in most economies; growth rates were elevated temporarily; and the resulting housing slump, and wave of distress for over-borrowed sovereigns, from Hungary to Greece, Portugal and Ireland, was to ensue directly. Parallels with the later 1970s are all too evident.

### 1.3 Spread Volatility

On top of the worldwide effect of higher nominal and real short rates, come the idiosyncratic jumps for borrowers suddenly suspect. The variability of spreads is hard to explain. In well known and impressive papers, Remolona et al (2007, 2008) attribute spread volatility largely to changes in risk aversion on the part of creditors. A not dissimilar story, this time linked to the business cycle, is offered by Mendoza and Yue (2008). The case against Remolona et al is that individuals’ agents’ utility function characteristics, such as risk aversion patterns, really should be viewed instead as primitives; that market prices and risk aversion premia (if any\(^8\)) should vary according to disparity of information between agents, beliefs about covariances, and opportunities to diversify risk; and that sharp changes in

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\(^7\) See Woodford (2003), who argues that predictable policy rate smoothing makes the instrument more powerful, by signalling the way that rates are likely to keep moving in future.

\(^8\) The view that lenders also underpins the contingent bad-state renegotiation models of Fender and Sinclair (2000, 2006), where debt and equity may reverse roles as vehicles of insurance, in contrast to the standard approach of, say, Stiglitz and Weiss (1983).
spreads should reflect news, altered probabilities of default. On the other hand, while individuals’ personal risk attitudes might be primitives to be treated as given, those implicit in the portfolio decisions of financial firms may well not be. Whether because regulations tighten or loosen, or because of the kinks in the way returns are shared between firm and its creditors, safety may be prized much more highly as against expected return at certain times, and much less, if at all, at others.

In the different circumstances of the capital structure of firms within a large economy, Chen (2010) attributes asset price volatility to revised beliefs about probability. Uribe and Yue (2006) find that more than half of the movement in country spreads are attributable to spread shocks – which one may explain in terms of perceived probability revisions.

On the other hand, it can be argued that at exceptional times, such as after the collapse of Lehman Brothers in 2008, these relevant probabilities simply cannot be quantified. Financiers are launched, for a while, into a world of Knightian uncertainty. Some asset markets can suddenly close, preventing any trade, at any price; other assets may be traded in small amounts only in very thin markets, driven up and down wildly by seeming accidents or what appear to be very small changes in sentiment; and unexpected changes in risk correlation patterns turn what appeared to be very safe tranches of senior claim into highly risky equity.

1.4 Greece and Ireland

At the time of writing, in Greece and Ireland, \( r \) now exceeds \( g \) – in the short term at least – and with a vengeance. Were the worst to happen, and they felt impelled to leave the Eurozone, and then experience exchange rate depreciation for their revived independent currencies, the domestic currency value of their governments’ obligations could jump greatly. Most of these debts are denominated in euro; some are in US dollars. In Greece and Portugal, balance of payments accounts and relative external competitiveness indicators suggest that real exchange rate depreciation would be advantageous as a device for hastening a return to long run equilibrium (although this is not so for Ireland). But it would gravely aggravate balance sheet problems for their banks and their government.
Most of the literature looks at individual debtor countries that either enjoy some measure of monetary sovereignty, or are forced to devalue. By contrast, Bolton and Jeanne (2010) offer a fascinating model of a diverse set of countries bound together by financial and monetary integration, but which are heterogeneous in the strength of their governments’ fiscal positions. The weak, they find, impose a negative externality on the strong. They over-borrow, ignoring contagion effects. The contagion makes the strong borrow less. The overall supply of government debt is skewed away from the strong. While setting up a stabilization fund may limit risks of default by the weak, that turns out to reduce – maybe annul – the benefits that strong countries can gain from the financial integration.

The Bolton-Jeanne model is very well suited to study the EU sovereign debt crisis of 2010-11. The European Central Bank is immune from interference by any member government. So it has no incentive to deploy the gentleman’s default mechanism of surprise inflation (except indirectly in so far as this might conceivably relieve some of the strain on member countries’ banks with impaired assets). So it will presumably remain unused. Any attempt to deploy it would be opposed by the governments of the EU’s stronger countries, let alone by the governors of their national central banks. Yet in retrospect one can see that the Maastricht fiscal limits have been warped and breached. Given this, financial market participants have concluded that rescheduling is likely. Hence the very large increase in risk premia and spreads, and the continuing downgrades by the rating agencies. The EU/IMF packages for Greece and Ireland purchase time but cannot be claimed to offer an enduring solution. The high interest rate spreads embed expectations that future renegotiation and rescheduling – quite probably with an element of forgiveness – have simply been delayed. But not prevented.

Furthermore, as Das et al (2010) argue, perceived default risks appear to have large and unwelcome spill-over effects to private capital in the affected countries, further compounding the short run effects on $g$ that may follow from fiscal rebalancing. Here we appear to have a case of anticipated default driving $r-g$ into strongly positive territory, and thus exacerbating concerns about fiscal sustainability, rather than the other way round; or it may be an instance of sinister positive feedback.
Whether Greece, Ireland and other potentially distressed sovereigns, whether inside or outwith the eurozone, can avoid rescheduling or not, only history will tell. No-one knows. But the case for predicting, and indeed advising, such a rescheduling is heard frequently. Buiter and Rabhari (2010) is a prominent example. Lynn (2011) gives a popular account with the same messages. By contrast, official pronouncements are naturally much more sanguine.

2. Rescheduling

Rescheduling may take three forms: longer maturities; lower interest rates; and haircuts on the principal of the loan. Often all three elements are agreed upon. While default may signify unilateral repudiation or an agreed write-down, renegotiation – if successful – implies a concordat with creditors, however reluctantly reached. Pardon is balanced by a renewed commitment on the debtor’s part to repay. In practice both sets of parties should see advantage in a deal, however disagreeable. Outright unilateral repudiation may well lead to severe sanctions on the borrower, and at least temporary exclusion from capital markets, as argued by Eaton and Gersowitz (1981)9. For the lenders, it could spell a total loss.

2.1 How Much Debt Should be Forgiven?

How big should the element of “pardon” be? Rather like a devaluation within a fixed-but-adjustable exchange rate system, it should be sufficiently big to be credible. Then it should be large enough to dispel fears of any subsequent rescheduling in the near future. Otherwise repetition is to be expected; spreads will remain high; and nothing useful will have been achieved. It should also be appreciable enough for creditors to stiffen the terms of increased loans early, as soon as they come to anticipate that the chance of future renegotiation has become perceptible. And for the elevated threat of stops that this implies, to restrain the borrower’s appetite for extra debt in the first place, and to reduce the risk of sanctioning crazy mega-projects of the kind which brought Newfoundland, for example, to the verge of bankruptcy in 1895 and 1932-410. On the other hand, the pardon

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9 As exemplified by England’s repudiation of Edward III’s debts to his Italian bankers in 1340, for examples, or subsequent defaults by France, Spain and many other countries. See Reinhart and Rogoff (2009).
10 And, in 1934, to the suspension of dominion status and political autonomy.
element could also be too excessive. Imposing very severe penalties on creditor banks could even trigger financial crises in their own jurisdictions, as well as aggravating moral hazard temptations on others to over-borrow later on.

Within these limits suggested above, what other factors bear upon the issue of how big the pardon should be? One important consideration runs like this. For distressed sovereigns, the rates on emergency official funding, such as on IMF loans to Argentina a year before its currency board collapsed at the end of 2001, or the EU-IMF loans to Greece and Ireland in 2010, offer a valuable starting point. One way of calculating the appropriate haircut on lenders would be to use the reduction in the net present value of the original bank loans, relative to the historic rates at issue or reissue, implicit in the new, higher interest rates attached to the official emergency loans.

Consider the following simple example. Suppose a $1 billion six year sovereign loan was issued at a fixed annual rate of 3% in year zero. Two years later, the sovereign’s creditworthiness collapses. An official loan is granted at a crisis rate of 7% annually for four years. Interest is paid once a year. When the old loan, with four years to run, is revalued at the crisis rate of 7%, its net present value drops to $864.5 million. This is a reduction of 13.55%.

It would seem quite unreasonable for the creditors’ haircut in the ensuing negotiations to be any smaller than 13.55%. But it might be higher, and possibly substantially higher. Some upper limit would be placed on the size of the pardon, however, by virtue of the fact that the renegotiating sovereign’s future risk premium would (sooner or later) be elevated sharply as a result of enlarging the haircut much beyond 13.55%. The borrower has an incentive to preserve the option of borrowing later, on non-usurious terms. A really huge haircut will surely close that option.

This aspect of self-interest aside, what principles are there to guide renegotiators on how the pain should be split between creditor and borrower? The Nash cooperative solution gives little specific help, other than demonstrating the relevance of the two parties’ threat points, or external options, and of the exponents on the weighted geometric mean of the two parties’ surpluses. Extensions from a static to a dynamic analysis bring in further considerations, such as the parties’ discount rates, the rate (if any) at which the “pie”
depreciates over time, the rights (if any) of dissenting creditors to demur and hold up agreement, what the parties know about each other (and know that they know, and so on), the move order in the sequence of offer and counteroffer, and the extent of the parties’ ability, or lack of it, to precommit. They also suggest that an optimal \textit{ex ante} constitution prescribing the character and limits of renegotiations would very likely be harsher than an \textit{ex post} one.

In a one-off renegotiation, a utilitarian benevolent dictator would seek, in an otherwise first best world, to equalize the marginal utilities of consumption for the citizens in the creditor and debtor countries. And if the analysis is extended to many periods, these marginal utilities would need to fall at the rate of discount.

A further point is that rescheduling offers insurance gains, which are enshrined in the features of US, as opposed to European, bankruptcy legislation. Livshits et al (2007) argue that the insurance element in a fresh start (as in the US) smoothes consumption across states (although its absence (as in Europe) does a better job of smoothing consumption over time. The overall contrast for welfare between the two systems, Livshits et al suggest, will depend on the character of uncertainties.

Distress for a sovereign may not be a one off phenomenon, however: Reinhart and Rogoff (2009) cite a pre-revolutionary French minister of finance advising default every century, or less, to restore equilibrium\textsuperscript{11}. Even if it were one off, would considerations of fairness across generations imply that posterity should be forced to assume some of the cost? While the lending country’s citizens may be richer than the borrower’s, this might well not hold. China’s growing claims on the US government are a case in point, as are flows of capital between US states (Kalemi-Ozcan et al, 2010). Even where it did hold, the notion that utility depends on discretionary consumption, or at least partly on habits and hence at least partly on increases in consumption, what counts as an appropriate cross sectional splitting of the burdens of write-offs becomes time dependent and very complex\textsuperscript{12}.

\textsuperscript{11} Abbe Terray: p. 87
\textsuperscript{12} Helpman (1989) and Sachs (1990) give excellent early accounts of how debt renegotiations and reductions should proceed. Fernandez-Ruiz (2002) is illuminating on this as well.
Yet the principle that relative GDP or consumption per head, perhaps at purchasing power prices, should play some role, also commands attraction. Its main virtues are its inherent moral appeal, and the simplicity with which it can be applied. The past half decade have witnessed a substantial write-off of official debts of many African states, which are (in the main) very much poorer than the citizens in their creditor countries. In the case of Greece and Ireland, however, this criterion would hardly point to a pardon element in a negotiated settlement that was much greater than about one fifth.

The fact that these countries wish to retain their membership of the monetary union means that special attention should be devoted to how the distressed government can be enabled to recoup additional tax receipts, to help meet that part of the burden that is retained at home, at minimum domestic damage. Value added tax has the attractive feature that it is applied to imports and rebated on exports. So its short and medium run balance of payments effects resemble those of the formal devaluation that Euro participation precludes. Trade balance improvements add to aggregate demand; they would defend or enlarge employment in these countries’ exportables and import-competiting sectors; and they would offer the prospect of enhancing state revenues at much lower cost in GDP and employment than other fiscal measures.

3 Recovery ... and Repetition? Some Concluding Remarks

If the pardon is large enough to remove fears of imminent repetition, and the renegotiations include a fall in interest rates towards the old, pre crisis levels, something of a virtuous circle might ensue. The expected time profile of taxes on profits in the borrowing country should ease back, helping to strengthen medium term growth prospects. The borrowing country might be persuaded to take stricter measures to regulate banks and credit, qualify the borrowing rights of provinces or cities, or adopt fiscal measures, such as a switch from income tax to VAT, or a subsidy on saving, that would reduce the risk of over-borrowing, public or private, in the future. Trade, on the other hand, may suffer: Rose (2005) highlights the important empirical observation that creditor-borrower trade does weaken substantially after defaults.

13 Such as advocated by Krusell et al (2010).
So both direction and level indicators for sustainability might improve, even if trade does not. And for some years at least, the prospect of a further fiscal crisis falls away. So the rescheduling borrower can now present himself as a very attractive destination for short term funds: the ex post serial correlation between rescheduling events – highly improbable as they are - is itself strongly negative. The risk premium will not quite vanish, however, and that may, paradoxically, actually encourage portfolio managers to lend to him, at least on a short term basis. He will surely be a magnet for Foster and Young’s (2010) less competent fund managers, who masquerade as alpha, and aim to display a very high likelihood or run of superior returns, at the cost of a low probability black swan carefully concealed, very rarely revealed, and with luck long unsuspected, in the left tail of the returns distribution. And if he is, alas, the cycle of over-borrowing, crisis, renegotiation and recovery might repeat itself.

The authors of two recent are somewhat less pessimistic, however, and suggest quite different remedies to make repetition less likely. Hatchondo et al (2010) see the crucial issue as one of debt dilution: governments can borrow from many lenders, with no necessary link between the terms of, or parties involved in, pre-existing loans, and those granting to new loans. Given that bond and interest payments don’t vary with the borrower’s income, and that governments can’t commit, default risk is inevitable. Elevated interest rate spreads infect productivity within the borrower’s economy and act as shock-amplifiers. Their solution: tighter limits on debt dilution. This would mean tying the interest rate on existing floating-rate debts to those attached to new borrowings of similar maturity. This swift punishment mechanism neatly counterpoints the idea of writing down the capital value of outstanding loans, when interest rates rise on fresh or emergency official borrowing go up, that was explored above. In this, it acts as a substitute for short maturity.

By contrast, Broner et al (2010) take a very different tack, arguing that the main cause of difficulties is the paucity (or at least very low liquidity) of secondary markets on which old debt could be traded. Sovereign risk need not then require severe default penalties to prevent it from leading to economic inefficiency. What these two last papers share is the fact that they the benefits of a widened or more flexible interpretation of markets for debt – whether to guide renegotiation if misfortune makes that prove necessary, or even better, to nip default in the bud, and prevent the damage that the fear of it would wreak, in the first place. With old debt typically not particularly liquid even at quiet times, and locked into a
fixed coupon for some while, however, sovereign lending is riskier, more fitful, and more perilous than it need be.

The main conclusion to be stressed is that there is little theoretical or historical warrant to for thinking that the balance between the growth rate and the interest rate is likely to be positive on average. This implies therefore that any primary budget deficit that looks as if it may well persist should be deemed to herald a risk of higher inflation or default. And when the country’s authorities lack monetary autonomy – whether as members of a monetary union (as in the Bolton-Jeanne model) or in a hard peg exchange rate regime - renegotiation may be the only way out. Nor need this be a disaster. It can be a sensible release, and if inevitable, the earlier it comes, the better.

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