

Bankruptcy protection against macroeconomic shocks: the case for a ‘super Chapter 11’

Marcus Miller
University of Warwick
and
Joseph Stiglitz
World Bank

First draft: December 1998; revised December, 1999.

Abstract:

East Asian economies caught in the recent crisis have seen their output contract fiercely despite enormous real exchange rate depreciation. Why are relative prices not maintaining demand and output at pre-crisis levels?

We investigate the idea that there are negative *supply-side* shifts due to balance sheet effects. Specifically, we use the framework of Kiyotaki and Moore (1997) to explore the impact of an unexpected devaluation on highly-leveraged, fully-collateralised firms who have borrowed in foreign currency. A fall in the currency triggers margin calls and a consequent fire-sale of collateral assets: and it can easily cause collapse to a low level equilibrium.

Using the same framework, we show how crisis management can, in principle, avert collapse in two ways: by forced debt rollovers in the short run; and ultimately by debt write downs under Chapter 11 bankruptcy procedures. **But normal bankruptcy procedures are not designed to handle macro shocks hitting the whole economy : specifically they fail to internalise the price effects of asset ‘fire-sales’ required to satisfy margin calls.** We investigate the idea of a “super Chapter 11” where firms can write off debt increases due to devaluations in excess of a given limit; and show how it may avert economic collapse.

JEL Classification: E32, G21, G32, G33, and O54

Keywords: Credit market imperfections, financial leverage, financial crisis in East Asia, illiquidity and insolvency.

Acknowledgements: The views expressed are those of the authors and not necessarily those of the World Bank or its Directors. The formal treatment draws on earlier work on Hong Kong and Thailand with Hali Edison and Pongsak Luangaram. We are grateful to Enrica Detragiache of the IMF for her comments.

1 Introduction

A striking feature of the crisis in East Asia was the combination of deep devaluations and fierce contractions of production. It is as if demand-friendly relative price adjustment was nullified by sharply adverse supply-side effects. Why should this be so? Part of the answer, we believe, is that the balance sheet pressures exerted by the devaluation exceeded the capacity of financial procedures and practices designed for normal times.

The general idea is familiar enough. Banks, for example, get by with low reserve ratios in normal times, but collapse if there is a run on deposits and financial panics in 19th century England were only checked when the central bank acted as lender of last resort. In the same way, there may be a case for emergency clauses when it comes to corporate bankruptcy law. Charles Goodhart (1998) has pointed out that when countries left the Gold Standard in the 19th century the relative price effects were checked by the strong expectation that countries would return as soon as possible: but this is not true of the recent crises in East Asia. In these circumstances, we argue that there is a case for measures of semi-automatic debtor protection to avert industrial collapse.

Bankruptcy law is designed to solve problems of creditor coordination in the absence of contracts that might otherwise do the job.¹ It aims to restructure credits so as to avoid premature liquidation and to divide up the assets in the case that liquidation is necessary. In normal times, bankruptcy conveys a lot of information about the quality of a firm's management. But, in the context of a system-wide failure, little information is conveyed either about the manager or even the firm's long run viability. Even a well-managed firm could easily go bankrupt simply because it failed to plan for an 80 percent devaluation and a period of interest rates in excess of 100 percent. The mechanisms designed to handle small, idiosyncratic shocks simply cannot cope with a macroeconomic shock of this sort/magnitude.

¹ "In a world in which contracting parties are fully rational and can forecast every future contingency and specify them without any significant cost in a comprehensive contract, no purpose is served by bankruptcy law In general, provided the contract is enforceable and binding, there is no need for a law to tell the parties what to do, but simply an authority which guarantees the enforcement of their preferred contract." Cornelli and Felli (1995). The existence of bankruptcy law arises -- as Cornelli and Felli explain -- because it is in fact impossible to forecast all contingencies, because it is difficult and costly to write contracts, and because there is a pervasive problem of asymmetry of information which makes it difficult to assess the value of claims.

Consequently, the procedures for handling bankruptcies in normal times and in crises should be quite different. Just as a central concern in the time of crisis in the financial sector should be the preservation of the flow of credit, so too the central concern in corporate organisation should be maintaining production. But doing so in the midst of systemic bankruptcies is no small challenge. Not only is it undesirable to handle bankruptcy in the midst of a crisis in the standard way, it is probably not even feasible. There simply are not the resources – human or monetary – to address each bankruptcy individually. How can an administration possibly employ standard bankruptcy procedures when two-thirds of the firm in a country are insolvent, which, by one estimate, is the case today in Indonesia? Furthermore, the systemic nature of the bankruptcies makes sorting out the net asset positions even more difficult than normal. Because the bankrupt firms' assets consist of claims on other firms that are also bankrupt, discovering their net worth entails solving a complicated set of simultaneous equations. A further difficulty in following normal bankruptcy procedures is that it would be very difficult to find new managers or trustees to oversee all of the restructured firms; this limits the feasibility of management changes.

To ensure that production continues with as little disruption as possible will often entail restoring effective governance to those who know how to manage the enterprises – the current owner-managers – while at the same time reducing their cash flow burdens. Accomplishing this may require a combination of carrots and sticks to increase the speed of the workout.

One obvious measure is to grant owners a greater equity share than they might be entitled to under absolute priority. This is, after all, the motivation behind the provisions of Chapter 11. Is there not a case for a “super Chapter 11” to provide quasi-automatic protection to debtors from debt increases due to devaluation beyond a margin of, say, 40%? Such a provision would have effects far wider than the cases coming to the courts: it would set a benchmark for out of court settlements made ‘in the shadow of the law’.

This limit on the unanticipated transfers to the creditor could prevent industrial collapse in the borrowing country, but it raises the concerns of equity, specifically the fairness of changing the rules in mid-stream. To some degree, these claims may be outweighed by the greater imperative of maintaining production in the crisis. But "the rules" themselves are inherently ambiguous in the midst of a situation that neither party to the contract explicitly agreed upon or even envisioned. How the contract would change had it explicitly included the contingency of, say, a 80 percent devaluation and 15 percent GDP contraction, is uncertain. An interesting historical precedent is discussed later : the suspension of the gold clause in US debt contracts in the Great Depression.

In this paper we focus on balance sheet effects and the consequences of unanticipated devaluation for leveraged firms. Using a model of collateralised borrowing due to Kiyotaki and Moore (1997), hereafter KM, we show how a "haircut" for creditors applied to devaluations above a critical value would be Pareto-improving relative to normal bankruptcy.² In essence, the model has multiple equilibria, and such a device can avert a shift to the low level equilibrium.

The paper develops two key ideas:

- (a) Credit constraints provide a "theory of liquidity" --an explanation of why shocks may lead to large temporary effects on prices (though the price itself still represents the present discounted value of future quasi-rents in the unconstrained sector; there are no "misperception" problems). Though this is an old idea, it has only been recently modeled.
- (b) Where there are multiple equilibria, imposing constraints may serve to rule some out. For instance, there are models in which there may exist a "discrimination" equilibrium and a "non-discrimination equilibria". Rules forbidding discrimination (affirmative action rules) may eliminate the former. In cases like this, the "rules" make the market select one of the two equilibria. ; but, once in place, they are not actually "binding".

² Note that the effect that low equity and limited liability may have in leading some small businesses to engage in gambling or looting behavior prior to bankruptcy (Akerlof and Romer, 1993) is not included in the above model. This problem of 'moral hazard' has been credited with exacerbating the problems of the Savings and Loans debacle in the United States, for example and its role in East Asian crisis emphasized by Dooley (1997) and Krugman (1998).

There is a broader point to be made: in dynamic models where there are paths to multiple equilibria, uncertainty about which path the economy will follow in the future may have (adverse) effects today. Consider a model in which there are sunspot equilibria; everyone may agree on the number of sunspots will serve as coordinating device, but they do not know the number of sunspots at future dates; and that uncertainty will itself affect each of the equilibria at each date. It is clear that a rule which eliminates the sunspot equilibria -- focusing attention on the “best” equilibrium each period -- may have additional dynamic benefits by eliminating the ex ante uncertainty about the direction of the economy.

2 The basic KM model

There are two sectors: first, the credit-constrained sector whose land holdings are largely financed by short-term borrowing. We refer to these borrowers as ‘small businesses’ (which correspond to what KM call ‘farmers’). The second sector is a consolidation of the lending institutions and all other land owners: it is not credit constrained and its holdings effectively determine the price of land. For convenience, we refer to these lenders/owners as ‘finance houses’ (corresponding to KM ‘gatherers’).

In the absence of surprises, the total quantity of land held by small businesses, denoted k_t , is determined as follows. We begin with their – slightly simplified – budget constraint:

$$q_t(k_t - k_{t-1}) + Rb_{t-1} = \mathbf{a}k_{t-1} + b_t \quad (1)$$

LAND ACCUMULATION + DEBT REPAID = INCOME + BORROWING

where b_t is the amount of one-period borrowing, repaid as Rb_t (where R is one plus one-period interest rate), q_t is price of land, and \mathbf{a} measures the productivity of land in this sector.

To motivate the credit constraints, KM assume the owner/manager of each business in this sector uses an ‘idiosyncratic³ technology’ (and retains the right to

³ Idiosyncratic in the sense that once production has started at date t , only s/he has the skill necessary to produce output at $t+1$, i.e., if s/he were to withdraw labour between t and $t+1$, there will be no output at $t+1$, only the land k_t .

withdraw labour). This means owners/managers may credibly threaten creditors with repudiation, and puts a strict upper limit on the amount of external finance that can be raised as “debt contracts secured on land are the only financial instruments investors can rely on” KM (1997, p.218). The rate of expansion of the highly-leveraged, credit-constrained property companies is thus determined not by their inherent earning power but by their ability to acquire collateral. These are strong assumptions -- maybe too strong: and some of the results obtained later will be qualified accordingly. (Note, however, that the manner in which Long-Term Capital Management was rescued in 1998 supports the notion of an idiosyncratic technology – at least for hedge funds: the reason why the existing management was not replaced was that only Nobel Prize winners could understand the contracts!)

Assuming that borrowing gross of interest is chosen to match the expected value of collateral implies

$$b_t = q_{t+1}k_t/R. \quad (2)$$

After substitution in (1), one obtains

$$(q_t - q_{t+1}/R)k_t = ak_{t-1} \quad (3)$$

where the LHS measures the net-of-borrowing cost of acquiring land k_t and the RHS measures the net worth⁴ of the firms at beginning of the period. As KM (1997, p.220) remark, the firms use all their “net worth to finance the difference between price of land, q_t and the amount they can borrow against a unit of land, q_{t+1}/R . This difference $q_t - q_{t+1}/R$ can be thought of as the down payment required to purchase a unit of land”.

The arbitrage condition for other users of land, the ‘finance houses’ which are not credit constrained, implies

$$f'(k_t) + q_{t+1} - q_t = (R - 1)q_t \quad (4)$$

where $f'(k_t)$ is the marginal productivity of land in the unconstrained sector expressed as a function of k_t the amount of land in the constrained sector. Note that, with diminishing returns in the unconstrained sector, $f' = -g' < 0$, $f'' = g'' < 0$ where $f(k_t) \equiv g(\bar{k} - k_t)$.

⁴ By definition, the net worth of property companies at the beginning of date t is the value of tradable output and land held from the previous period, net of debt repayment, i.e. $(a + q_t)k_{t-1} - Rb_{t-1} = ak_{t-1}$.

As KM note, the user cost of land to property companies $u(k_t)$ must, by arbitrage, equal its productivity to finance houses, i.e.

$$u(k_t) = (q_t - q_{t+1}/R) = f'(k_t)/R; \quad (5)$$

so $u(k_t)$ equals the discounted marginal productivity of land in the unconstrained sector (which, because of arbitrage, we refer to as the ‘user cost’ of land in what follows).

Substituting (5) into (3), gives

$$u(k_t)k_t = ak_{t-1}. \quad (6)$$

For simplicity of exposition, we assume that the user cost is proportional to k_t , specifically:

$$u(k_t) = \frac{\mathbf{b}}{R} k_t \quad (7)$$

where \mathbf{b} corresponds to the second derivative of the production function in the unconstrained sector, i.e. measures the rate of decline in the marginal productivity of land used by the finance houses, and the discount factor $1/R$ reflects one-period lag in production. [Note that – on the assumption that total amount of land is fixed in supply – the user cost (i.e. the discounted marginal product) is for convenience expressed in (7) as an increasing function of land held by property sector – instead of a decreasing function of land used by finance houses themselves.] Combining (6) and (7) yields a non-linear difference equation which can be written:

$$k_t = \sqrt{\frac{Ra}{\mathbf{b}}} k_{t-1}^{1/2}. \quad (8)$$

and the dynamics of land accumulation in the absence of shocks is shown in Fig. 1, where the top panel plots k_t as the non-linear function of k_{t-1} given in (8) above. There are evidently two equilibria, one at zero and the other at $k^* = Ra/\mathbf{b}$; the latter is stable while the former is not.

More generally, as can be seen by differentiating of Equation (6),

$$\frac{dk_t}{dk_{t-1}} = \frac{\mathbf{a}}{u'(k) + u''}$$

$$\frac{d^2k_t}{dk_{t-1}^2} = \frac{-a(u'' + au')}{(u'k + u'')^2} > 0 \text{ as } u'' + au' < 0$$

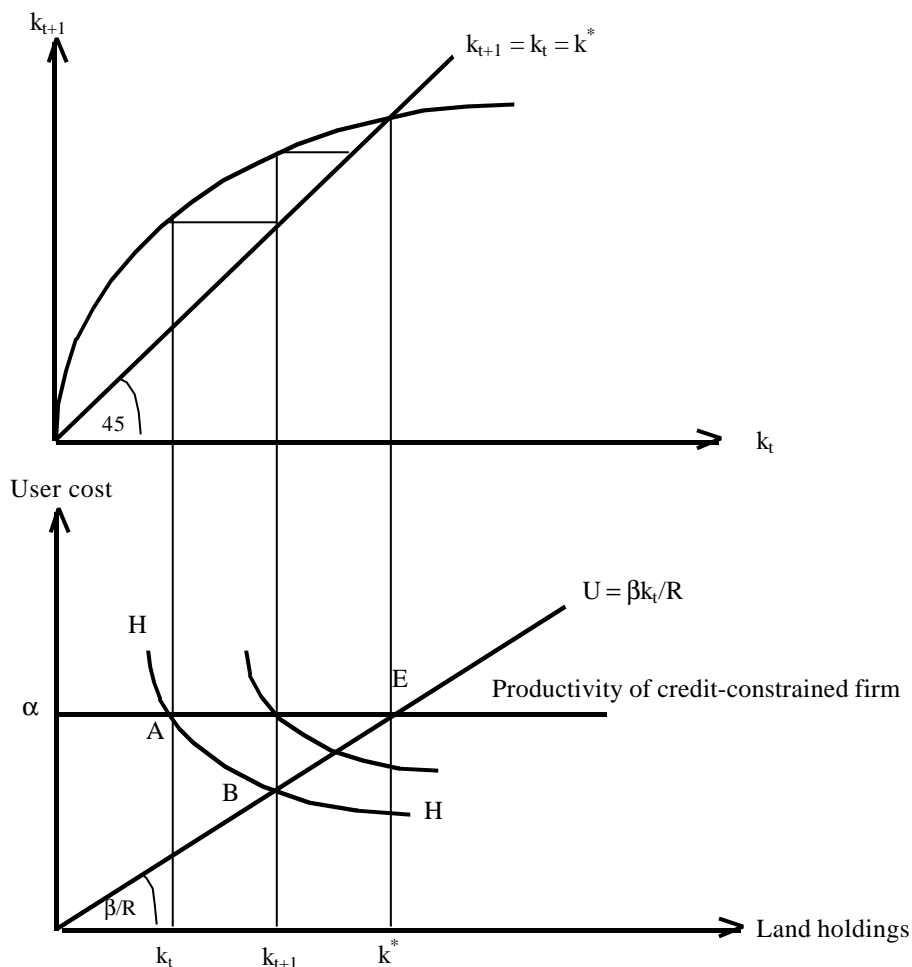


Fig.1. Dynamics of the KM model with no surprises

The path of convergence to k^* from an initial value of $k_t < k^*$ is also shown in the lower panel where the vertical axis measures its productivity in the small business sector and the user cost of land (its discounted productivity in the other sector). As (6) requires ak_{t-1} (i.e. net worth) be set equal to $u(k_t)k_t$ (today's holdings times the user cost), the points labelled A and B must lie on the same rectangular hyperbola, labelled HH in the figure. This illustrates how to find k_t given k_{t-1} . (On the same principle, land holding in periods $t+1$ can be found by shifting the hyperbola to the right as shown.) Note that the net worth of property companies (ak_{t-1}) increases as k approaches k^* .

This is because, with credit rationing, the productivity of land in this sector is higher than the user cost.

In these circumstances, the value of land is given by the present discounted value of user costs i.e.

$$q_t = \sum_{s=0}^{\infty} \frac{u(k_{t+s})}{R^s} \quad (9)$$

where these are measured along the path towards equilibrium. In numerical examples below, we approximate this by the linear function

$$q_t - q^* = \mathbf{q}(k_t - k^*) \quad (10)$$

where $q^* = Ra/(R-1)$ and \mathbf{q} , which measures the sensitivity of land prices to land sales, $= \mathbf{b}/(R-f/2)$, and the autoregressive coefficient of land accumulation, $\mathbf{f} = (Ra/\mathbf{b})^{1/2}$; so $\mathbf{q} = \mathbf{b}/(R-1/2)$ where $\mathbf{f} = 1$.

Before adding extra features to their model, KM use it to study the effects of a temporary productivity shock affecting all small businesses which unexpectedly raises the parameter \mathbf{a} by $D\mathbf{a}$ for one period only; and they show that because the small business sector is credit-constrained, this has effects on the value and allocation of land which persist beyond one period. They emphasise that this unexpected rise in productivity not only eases the borrowing constraint on small businesses directly by raising \mathbf{a} in (6), it also helps indirectly by raising the price of their land, which (because debt is not indexed) raises their net worth.⁵ In the face of a one-time sector-wide positive productivity shock, which occurs when the system is in equilibrium, (6) needs to be recast as:

$$u(k_t)k_t = (\mathbf{a} + D\mathbf{a} + q_t - q^*)k^* \quad (11)$$

where $D\mathbf{a}$ is the ‘direct’ effect of the productivity gain and $q_t - q^*$ is the ‘indirect’ effect due to the rise in land prices.

In Edison et al.(1998) the authors looked at the ending of a land price bubble which cuts the value of collateral for all borrowers. So long as the shock comes after they have put in their labour – i.e. they have committed their net worth – they cannot

⁵ Note that, in the KM model, credit-constrained land users have an incentive to hold more land than in the market equilibrium as it yields them a non-marketable product \mathbf{g} which makes its total productivity $\mathbf{a} + \mathbf{g}$.

simply write down their debt and are faced instead with margin calls. The effect of the fire sales of land can easily bankrupt firms that were initially solvent. So land which provides excellent collateral against idiosyncratic productivity shocks provides no protection against shocks that affect the price of land nation-wide. The same is true of bankruptcy law, as we aim to show.

3 An exchange rate shock - with loan recalls

In an open economy setting, where unhedged short-term borrowing in foreign currency is a significant source of finance for small businesses, the latter will be extremely vulnerable to unexpected falls in the value of local currency. Let y be the fraction of total borrowing that is in foreign currency loans and d , the unexpected devaluation. As this raises local currency value of total borrowing by $x = (1 - m)y d$ %, it will have the same effect on the net worth of small businesses as an property market as an x % collapse in land prices.

If the devaluation occurred when the economy was in equilibrium at E and the foreign lenders were willing to write off all the unexpected capital gains on their loans, the system would stay at equilibrium. But if not, loans will be recalled because of inadequate collateral, leading to 'fire-sales' of collateral assets.

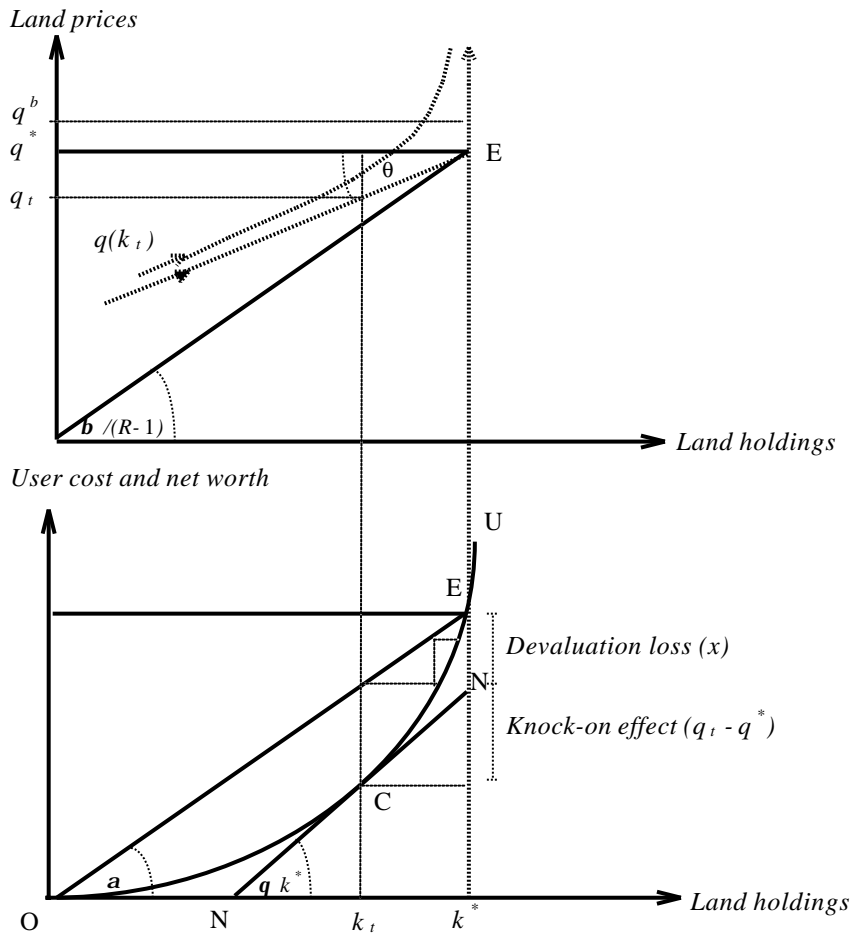


Fig.2. Direct and 'knock-on' effects of devaluation

Will the loans get repaid, or will the squeeze be counter-productive -- driving borrowers bankrupt? To find out we solve for first period equilibrium by putting the shock, x , into (11); so k_t and q_t are implicitly defined by

$$\frac{\mathbf{b}(k_t)^2}{R} = [\mathbf{a} + (q_t - q^*) - x]k^* \quad (12)$$

together with (10) above. [The LHS of (12) is the total net-of-borrowing cost of holding land k_t and the RHS measures the net worth of the firms at the end of period $t-1$, after bubble has burst.] This is analogous to the procedure described above to determine the initial effects of an unanticipated productivity shock, with x replacing \mathbf{Da} .

To check the solutions of equation (12) we plot the two sides separately, see lower panel of Fig. 2 where the LHS, shown as the quadratic function OU , is the user cost of land (with equilibrium at point E where the OU crosses the line $\mathbf{a}k_t$); and the RHS, labelled NN , gives the net worth of all property companies after the devaluation

(and appears as a linear function of k with slope qk^* , once $q_t - q^*$ has been replaced by the approximation, $q(k_t - k^*)$). First-period equilibrium is where the two curves intersect.

The net worth of small businesses falls for two reasons: first through the direct the direct impact of devaluation, which we label x (and show by the distance EN in the figure); second because asset prices fall as collateral is sold to meet margin calls—this is what KM (1997, p.212) refer to as the ‘knock-on effect’. (It is because the latter depends on the volume of disposals, that the net worth function NN slopes downward to the left in the figure.) We illustrate the case where OU and NN intersect at a unique equilibrium point, C, where the net worth of all property companies is just sufficient to provide the down payment of land holdings, k_c . In the absence of further surprises, the net worth of these property companies will recover towards equilibrium at E, following the dynamic path sketched in the figure (analogous to that appearing in Fig. 1).

This unique equilibrium is a special case: the quadratic equation may have two equilibria or none. A smaller shock, which leaves the net worth schedule above NN, yields two equilibria (above and below k_c); while a larger shock, with a net worth schedule below NN, rules out any intersection. In this case all the credit-constrained firms go out of business. Hence the distance EN, which measures $(q^b - q^*)k^*$, indicates the size of the largest adverse shock consistent with survival of small businesses.

In fact this model is extremely vulnerable to adverse shocks. Highly leveraged firms with very little net worth will soon be insolvent if the exchange rate falls. If their net worth were only 1% of assets held as collateral for loans and if say 10% of loans were unhedged foreign borrowing, a 10% fall in the currency would wipe them out, even before fire sales begin. [By finding numerically the largest shock (the ‘maximum devaluation’) consistent with a return to equilibrium, one can see how vulnerable these highly-leveraged companies are to adverse shocks.] The model may be made a good deal more robust by including margin requirements -- and by lowering the elasticity of user cost, see Edison et al (1998, section 3).

4 Financial stabilisation

By driving down asset prices and causing bankruptcy, lenders trying to recall loans impose externalities on others willing to accommodate the borrowers. How can one solve this collective action problem?

4.1 Forced roll-overs

In circumstances where borrowers solvency is only at risk due to the price effects of fire-sales, extra lending may suffice to ensure recovery. This is the classic case for a lender of last resort. Alternatively, existing creditors may be persuaded to participate in a forced rollover where they have to provide 'temporary financing' over and above what the rules of collateral would allow (so they are collectively forced to act as lenders of last resort). How is this to be implemented? One can give three recent examples of ad hoc arrangements. First Thailand where the operations of the finance houses who provide credit to the property sector were temporarily suspended in early 1997: loans were consequently not recalled, which averted 'fire-sale' disposals of property and a collapse of property prices. Second South Korea in December of the same year when foreign short term creditors were put under pressure by their respective central banks to recognise their collective self-interest and avoid a unilateral Korean debt default. Third the rescue of the near-bankrupt LTCM in 1998 by a 'lifeboat' of blue-blooded banks launched by the Federal Reserve Bank of New York to avoid fire-sales by a firm with \$100 billion liabilities on the books (and many more off balance sheet).

4.2 Financial restructuring -- loan write-downs

Loan rollovers may prevent a collapse in asset prices and avert default, but borrowers cannot continue rolling up interest in this fashion forever. (Asymptotically, their debt would expand at the rate of interest, which violates the intertemporal budget constraint.) Debt write-downs and/or capital injections are required. If the unanticipated shock to borrowers net worth comes from a fall in the exchange rate, there is an equivalent unanticipated capital gain by foreign creditors; so a debt write down will simply limit the unintended transfer from borrower to lender.

These two steps in crisis management are illustrated in Fig. 3. It is assumed that the initial adverse shock reduces net worth almost to zero before any knock-on effects are taken into consideration, see the net worth schedule NN. Enforced short-term roll-overs of EN shift the net worth schedule to OE and maintain a temporary equilibrium at E without any fires-ales; but net worth would inevitably fall to zero if the latter take place when the enforcement period ends. Debt write-downs of value MN will stabilise the situation: the net worth of the property companies after reconstruction is shown by MM with temporary equilibrium at point C (i.e., landholdings of k_c) and subsequent recovery to equilibrium at E as indicated in the figure.

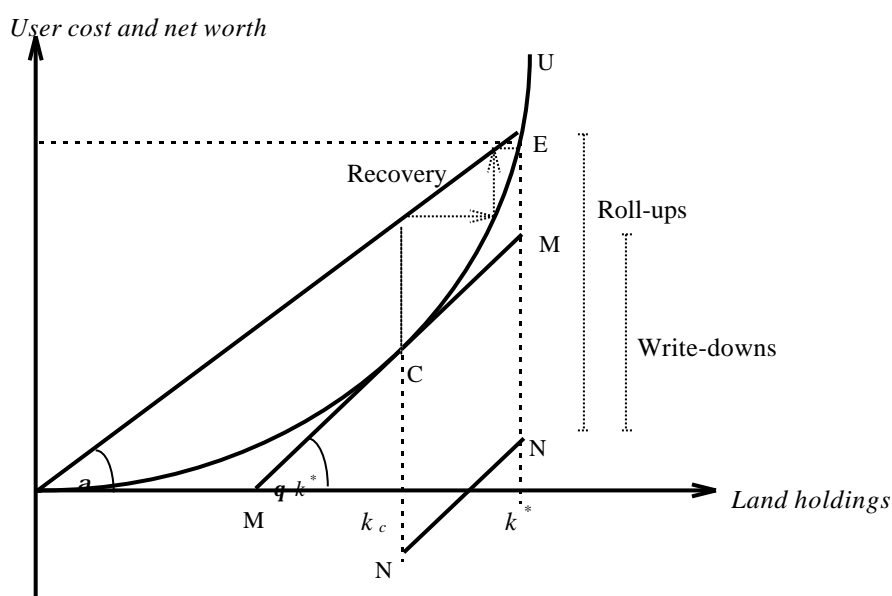


Fig. 3. *Averting collapse : roll-overs, write-downs and recovery*

How are these write downs to be achieved? Technically they might be implemented through Chapter 11 procedures. But consider the obstacles: first the question of whether Chapter 11 or its equivalent exists in the country concerned; then how the legal system could cope with the number of potential cases to be handled; and finally how procedures designed to deal with idiosyncratic shocks will cope with macro shocks.

There are two distinct possibilities here: if most firms get a write down corresponding to devaluation losses or a bit less – see figure -- all will be solvent and recovery can

take place. But if not, the general equilibrium fall in asset prices will render firms insolvent and require the courts to close them down, driving the system to a low level equilibrium – at the origin of the figure.

For large macroeconomic shocks, therefore, it seems quite possible that even efficient Chapter 11 procedures could fail to solve the collective action problem of keeping the system in the recovery range. For in this case, where NN is positive at k^* but is too low to intersect OU , there is a unique equilibrium for each firm – going out of business. With write-downs, there can be a new equilibrium for the economy as a whole; but this requires collective action. It requires concerted action to prevent the price effect of fire-sales that drive the system to the low level equilibrium – here the origin. **It does not pay any one creditor to write down debt, as this will not prevent the price effect of fire-sales caused by other creditors. Macroeconomic shocks pose a systemic problem, because the rules of collateral are not designed to cope with correlated shocks and their associated price effects. This is the case for a super Chapter 11** -- or an additional chapter of the code – that will identify macro shocks and the protection to be extended to debtors as a consequence⁶ .. In the the present context, given that the maximum hit that debtors can take is EM , the authorisation of automatic write-offs of the debt increases for devaluation losses in excess of EM would avert a collapse. The wording of the law could refer to exchange rate changes which are officially agreed to be unexpected and excessive.⁷

[Our exposition has focused on debt write-downs, $Db < 0$; this is because in the KM model equity participation is actually ruled out because there is no credible residual value for shareholders (see KM, 1997, p. 218, footnote 8). With margin requirements and debt write-downs, however, there could well be some residual value to re-assure equity investors.

Algebraically, the minimum amount of financial reconstruction required to avoid wholesale bankruptcy can be determined from the condition that

⁶ Note that this general equilibrium effect (of adverse shocks affecting prices and via fire-sales) does not arise for isolated cases of bankruptcy due to uncorrelated, idiosyncratic shocks.

⁷ Alternatively, the law could specify a formula .

$$\frac{\mathbf{b}(k_c)^2}{R} = [\mathbf{a} + q(k_c) - q^b - \mathbf{D}b + \mathbf{D}c]k^* \quad (13)$$

where k_c is the ‘unique’ first-period equilibrium shown in Fig. 6, $-\mathbf{D}b$ is a debt write-down and $\mathbf{D}c$ ($< mq_{t+1}k_c$) is a capital injection.]

5. Some criticisms and a historical precedent

The analysis in the preceding section can be faulted in various ways: it deals only with one, unanticipated shock, for example; the retrospective legal action we suggest would involve violating creditors rights; and last of all it has been suggested that there is no need for legal action as the private renegotiation of debt contracts will do the job of averting collapse.

The first point would be relevant to analysing a Super Chapter 11 as a permanent feature of the legal system, but it is hardly a reason for not applying the analysis to the East Asian crisis where the shock was largely unanticipated (and is the principal focus of this paper)⁸.

This brings us to the second point. Dare a country like Indonesia, hit by a major devaluation which has trebled the price of a dollar in local currency, abrogate creditors rights? We are obliged to Randall Kroszner for drawing our attention to an important precedent: that of the U.S. in the Great Depression. When the U.S left the Gold Standard in 1933 Congress passed a Joint Resolution nullifying gold clauses in both private and public debt contracts. If the clauses had been enforced, the debt burden of borrowers would have increased by 69%, the rise in the dollar price of gold. Although this resolution was challenged in the courts, it was upheld by the Supreme Court in 1934. When the Supreme Court gave its decision, government bonds with gold clauses fell in value; but confirmation of the debt relief lead to higher prices for corporate bonds as “the benefits of eliminating debt overhang and avoiding bankruptcy for private firms more than offset the loss to creditors of some chance of

⁸ How will the cost of borrowing be affected by a Super Chapter 11 applied to repeated shocks? It could rise, of course, but it need not as the provision could have the self-fulfilling feature that if it works it need not be used!

trying to recover the additional 69%". Kroszner(1999, Abstract). The action of the Roosevelt administration in trying to prevent the U.S. economy from sliding further into depression are, we submit, a reasonable precedent for what we propose.

Finally there is the proposition that private creditors will see it in their own interest to write down debts rather than drive firms into bankruptcy. (If so, there was presumably no need for Roosevelt to campaign for cancellation of the gold clause, it would have cancelled itself -- at least for private debt!) The problem with leaving it to private renegotiation is twofold: first, to prevent the collapse of collateral prices the write-downs need to be coordinated, no mean problem in a large, decentralised economy. Second, there is temptation facing each individual creditor to "free ride" on the actions of others. ("Thanks to the actions of other creditors to stabilise asset prices by writing down debt their debts, I can collect mine without a write down!") Taken together, these imply that the private sector is unlikely to solve things unaided.

The situation in Indonesia is an important case in point. Creditor rights being very weak under current law, insolvent firms cannot easily be driven into liquidation -- so they keep going. In these circumstances the wholesale imposition of Western style bankruptcy law could make things worse, unless it is accompanied by a super Chapter 11, as insolvent firms are closed, causing further insolvencies,.... So the current situation might be a second best. Why not move to a first best ? There's the Catch 22: "because talk of a super Chapter 11 would imperil the private sector renegotiations currently going on"!

6. Conclusion

In theory and in recent experience it appears that asset sales by credit-constrained firm in response to devaluation could greatly amplify its effects and lead to wholesale collapse of leveraged firms. To shed light on the recent (and continuing) financial

crisis affecting East Asia, we have applied Kiyotaki and Moore's model of credit cycles to see how stabilisation policy might prevent financial collapse. For substantial macroeconomic shocks, loan rollovers act as a stop-gap; but loan write downs will be necessary to avoid a Ponzi game. But the application of Chapter 11 may be cumbersome and possibly ineffective, as ordinary bankruptcy laws fail to internalise the price effects of macro-economic shocks. There is a case for a super Chapter 11 to do the job properly.

While these may be effective crisis measures, the vulnerability of the financial systems in East Asia suggests the need for prevention⁹. To discourage exposure to unhedged foreign currency borrowing, Chile and Columbia tax short-term external borrowing more than long term, the justification being that they reduce a negative externality, namely systemic collapse.

⁹ Williamson (1999) argues that prudent external debt management may also reduce the risk of creditor panic and exchange rate collapse. So too could capital controls.

References

- Akerlof, George and David Romer (1993). "Looting - The Economic Underworld of Bankruptcy For Profit." *Brookings Papers on Economic Activity*, no. 2, pp. 1-73.
- Cornelli, Francesca and Guido Felli (1995) Appendix. In B Eichengreen and R Portes, *Crisis, What Crisis?* London: CEPR
- Edison, Hali, Pongsak Luangaram and Marcus Miller, (1998). 'Asset bubbles, leverage and lifeboats: elements of the East Asia crisis' Revision of CEPR DP No 1461. Available at <http://www.warwick.ac.uk/fac/soc/CSGR/glob-fin.html>.
- Furman, Jason and Joseph E. Stiglitz (1998). 'Economic Crises: Evidence and Insights from East Asia.' Mimeo (November).
- Goodhart, Charles (1999) "Panel Discussion". In P Agenor, M Miller, A Weber and D Vines (eds.) *The East Asian Crises: causes, contagion and consequences*, Cambridge: Cambridge University Press
- Greenwald, Bruce and Joseph Stiglitz (1990) "Macro economic models with Equity and Credit rationing". In R. B. Hubbard(ed.) *Asymmetric Information, Corporate Finance and Investment* . University of Chicago Press
- Greenwald, Bruce, Joseph E. Stiglitz, and Andrew Weiss (1984). "Informational Imperfections in Capital Markets and Macroeconomic Fluctuations." *American Economic Review*, vol. 74, no.2, pp.194-99.
- Kiyotaki, Nobuhiro and Moore, John (1997). 'Credit cycles.' *Journal of Political Economy*, vol.105, (April), pp.211-248.
- Kroszner, Randall S. (1999) "Is it better to forgive than to receive? Repudiation of the Gold Indexation clause in long-term debt contracts during the Great Depression". Mimeo. Graduate School of Business, University of Chicago.
- Williamson, John (1999). "Implication of the East Asian Crisis for Debt Management." mimeo (January). Available at www.warwick.ac.uk/fac/soc/CSGR/glob-fin.html.