

Case study: Restructuring Argentine debt: a renegotiation game?¹

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Introduction

Following a bout of hyperinflation in 1989-90, Argentina adopted a Convertibility Plan “which stipulated a one-for-one parity between the Argentine peso and the US dollar and guaranteed the right to convert pesos at that rate, meaning that devaluation would require a new act to be passed by Congress” (Williamson, 1995). Consequently, for the following decade, Argentina was the largest country in the world employing a currency board system, a monetary arrangement in which the country abandons its monetary sovereignty in favour of a rule which links its monetary base to the inflow and outflow of dollars on its overall balance of payments.

Inflation ended promptly, and the economy grew rapidly in the early 1990s. But the rise of the dollar and the devaluations of neighbouring countries like Mexico and Brazil put great strain on the dollar peg. The peg finally proved unsustainable, with capital outflows leading to repeated bank runs, and the end of the currency board was likened to a ‘slow-motion train crash’ both because it was widely foreseen and because its effects were so catastrophic. The country was thrown into constitutional chaos and economic despair, with unemployment rising to 20% and half the population falling below the poverty line. Economic recovery is now under way, but the overhang of dollar debts on which interest is not being paid has still to be resolved. The long-awaited offer of a swap of bonds in default for new bonds of lower value - the largest- ever swap of sovereign debt - is currently under way; “As of last week, holders of about 40% of Argentina's defaulted bonds had accepted the proposal, but the rate of acceptance is accelerating as the Feb. 25 end of the offering draws closer. Most analysts expect the final tally to exceed 75%... The IMF and U.S. Treasury have hinted they would be satisfied with 75%, which could restore Argentina's access to IMF funds.”² In the first section we discuss how bargaining theory may be used to help understand this process.

In the second section we turn to wider implications for the global financial system. With the currency board looking increasingly unviable in 2001, the IMF proposed a Sovereign Debt Restructuring Mechanism modelled on Chapter 11 of the US Bankruptcy Code (which puts the courts in charge of debt restructuring). This effort to formalise the process - and to put the IMF at the centre of the stage - was dropped in the face of objections from creditor representatives, from large debtors and the US Treasury. Restructuring has been left for negotiation between the sovereign government and the bondholders, using the procedures of the courts under whose laws the debt has been issued. The US court in Manhattan in

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² Michael Casey “Argentina Looks Likely to Pull Off Bond Discount”. Wall Street Journal. New York, N.Y.: Feb 18, 2005. pg. A.9

particular plays a critical role, for it is the judge there who has to decide whether Argentina is negotiating in good faith; and, if not, what sanctions are applicable. The ultimate sanction would be to allow bondholders who sue in court to seize money being paid to other creditors like the IMF: this is what the so-called vulture-funds who appear regularly in court are hoping for.

As Judge Griesa oversees the process of Argentine debt restructuring - with the help of depositions supplied by the US Federal Reserve and the US Treasury acting as friends of the court - it appears that the future of the global financial system is effectively being decided in a New York courtroom. We analyse the possible outcomes when the Judge tries to set the rules of play so as to secure a fair outcome.

SECTION 1: Restructuring debt as a bargaining game.

1(a) The size of the problem

When the peso collapsed from its pegged rate of one dollar to a value of only 33 cents at the beginning of 2002, the ratio of its dollar debts to its income rose to alarming levels, from around 50% to far above 100% of annual GDP. Expressed in terms of last year's GNP, the dimension of the problem facing Argentina is indicated in Table 1 which shows dollar debt and as a percentage of 2004 GDP. The dollar value of the debt is about \$182 billion, of which \$81 billion is owed to Senior debtors and the remainder, now \$101 billion including unpaid interest, owed to private creditors. Total debt now stands at 128% of GDP, more than double Maastricht target of 60%, and three times the equivalent target of 40% suggested for emerging markets. The cost of servicing the debt to private creditors (including interest due), using a real interest rate of 5.5% is shown in the next column as about 5 and a half billion dollars on debt or about 4% of GDP.

Table 1: Debt outstanding v. resources allocated for debt service.

Debt at 2004 prices in \$b (shown in brackets as % GDP¹)

	Gov't Dollar debt	Service cost ⁽²⁾ @ 5.5%	Debt service at Dubai	Recovery Rate ⁽³⁾
Total debt	\$182 (128%)		\$4.26 (3.0%)	
Senior at 2004	\$81		\$ 3 (2.1%)	
Restructured including past- due interest	\$101 (71%)	\$5.6 (3.9%)	\$1.26 (0.88 %)	23c
Restructured excluding past- due interest	\$81	\$4.5 (3.1%)	\$1.26 (0.88%)	28c

Notes (1): 2004 GDP approx \$142b

(2): Real rate taken from Calvo (2004)

(3): Recovery rate = debt service / service cost

(4): Market value capitalised as 5.5% = \$23bn

As this is beyond the country's capacity to pay, a write-down is necessary (or, in market parlance, creditors need to 'take a haircut'). This is what the Argentine Government proposed at Dubai, in September 2003. Two key aspects of the Argentine proposal were the strategic decision to allocate *three percent of GDP for servicing sovereign debt*, the decision to privilege *the senior creditors with full compensation* despite the threefold increase in the peso price of the dollar. Given the cost of servicing the senior creditors estimated at approximately \$3 b dollars, these assumptions currently leave a 'residual' of about \$1.26 (0.9 percent of GDP) for the service of private debt holders amounts, table 1 column 3. This implies a recovery rate offered to creditors of about 28% on debt without interest³ (and 23% on debt with accumulated interest due).

Debt renegotiation as a game of alternating offers

Bulow and Rogoff (1989) treat debt negotiations as bargaining over a fraction of GDP representing the value of gains from trade to the debtor. A settlement is when both agree on the share to be allocated to the creditors – a Pareto-efficient outcome that occurs without delay in the Rubinstein (1982) formulation of alternating offers where all the parameters are common knowledge and both agents are rational. In an earlier paper (Miller and Fronti, 2003) we used this approach to see what settlement might emerge from the current debt negotiations.

To estimate the size of the pie to be divided, we made use of what creditors said about Argentina's ability to pay after the Dubai proposal to 'gross up' the Dubai residual. This provided an estimate for the pie of about *2.1% of GDP*, an annual transfer of around \$ 3 billion at constant 2004 prices. The implications for a settlement are indicated in Table 2 below.

Table 2: Dividing the Pie: Creditor's payoffs on restructured debt

	Fraction of pie	Percent of GDP in 2004	2004 Dollars Billion	Recovery Rate (on debt w/o interest ⁽¹⁾)	Debt service ⁽²⁾ as % GDP
ABC claim	100%	2.1%	\$2.98	66 cents	4.2%
Bargaining outcome	50%	1.05%	\$1.49	33 cents	3.2%
Dubai residual	42%	0.88%	\$1.26	28 cents	3.0%

Memo item: depreciation of peso 66% since leaving the peg

Notes: (1) A total of \$81b, see Table 1

(2) Including \$3bn for senior creditors, see Table 1.

(3) The bargaining outcome shown is that for an infinite horizon game with no time between offers and equally patient players.

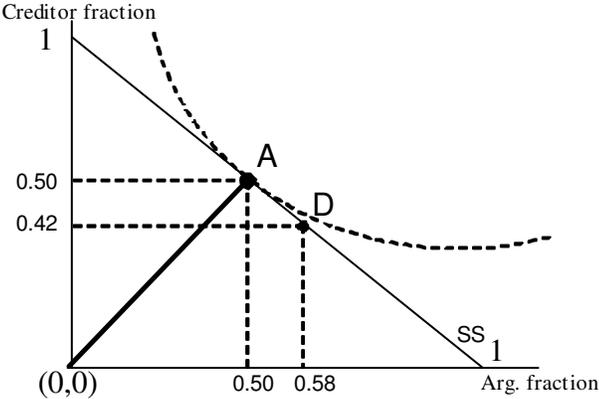
³ This figure suggests a smaller write-down than the 75% mentioned at Dubai: this is largely because the easing of global interest rates has cut the cost of debt service.

The size of the pie claimed by the Argentine Bondholders' Committee (ABC) and its implications are shown in the first row: a constant real flow of 2.1% implies a 2/3 recovery rate (on debt excluding rolled up interest) and, when account is taken of the cost of servicing senior debt, a total servicing cost of over 4% of GDP. This is a substantial increase above the 3% committed in the Dubai proposal (shown in the bottom row).

The settlement that would emerge from an alternating offers game if debtors and creditors use the same rate of discount is shown in the second row where the pie is split in half. The amount creditors would get, a flow transfer of about \$1.5bn dollars at 2004 prices, is just over one percent of 2004 GDP and represents a recovery rate of 33%. In this context, the bargaining prediction has an interesting interpretation – it implies that dollar debt will be written down in line with the peso, i.e. dollar debt will be ‘pesified’. (In 17 February 2005 defaulted bonds had a market value of around 32.5 cents per dollar.) The bargaining outcome suggests a recovery rate of 27 % on restructured debt including interest: this is consistent with the EIU⁴ estimation of a 25-30% recovery rate of the face value.

Another interpretation is evident in Figure 1, where the downward sloping line SS which shows all possible divisions of the pie (normalised to one) with the debtors fraction going to the debtor on the x axis and the fraction going to the creditors on the y axis. In contrast to the Dubai proposal labelled D, the outcome from *non-cooperative* bargaining, with alternating offers between two parties of equal patience, is shown at A. But this is also the point where the product of the logs of the shares reaches a maximum, as indicated by the tangency between SS and the dotted line where $\log(x)\log(y) = \log^2(0.50)$. Thus A corresponds to the outcome of *cooperative* bargaining under Nash's assumptions where both parties have the same bargaining power, Nash (1950).

FIGURE 1: Bargaining equilibrium for non-cooperative and cooperative bargaining with parties with equal bargaining power.

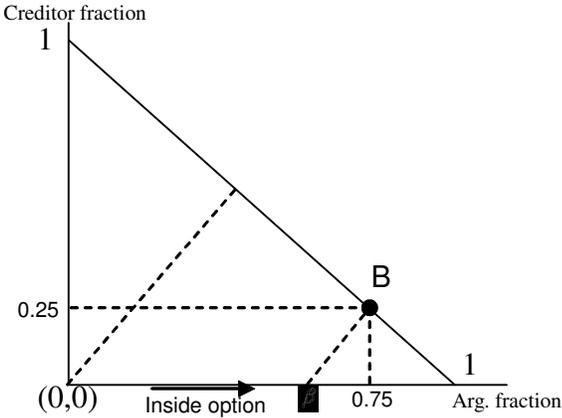


⁴ Economist Intelligence Unit: "Argentina finance: To swap or not to swap", 18 Jan 2005.

Options available to Argentina and the Creditors.

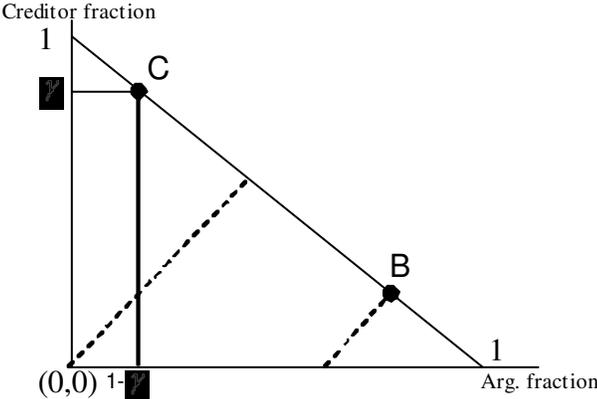
While the non-cooperative outcome is broadly in line with what the market now seems to expect, there are at least two factors which could shift it in favour of one or other of the parties. Consider first the possibility that Argentina can enjoy a good deal of the benefits of trade even while bargaining proceeds. Despite the freezing of trade credit by G7 countries, for example, Argentina can do deals with China for example. This benefit, referred to as an ‘inside option’, moves the Impasse point to the right of the origin as shown by the point β in Figure 2. Bargaining with this Impasse point predicts a settlement more favourable to Argentina as shown by point B in the figure. (This would be the outcome of a cooperative bargain where Argentina had the greater bargaining power.)

FIGURE 2: Bargaining equilibrium with Inside option for Argentina



Consider next a factor that could shift the settlement in favour of the creditors. The bargaining discuss so far assume that if bargaining breaks down, the outcome would be at the origin (where Argentina suffers financial ostracism and the creditors receive no interest), an inefficient equilibrium. Imagine instead that, if bargaining breaks down, Argentina continues *trading subject to sanctions* i.e. non of the gains from trade are lost but Argentina transfers a fraction γ of these gains to the creditors via legal “attachments”. This outcome would be economically efficient and more attractive for the creditors than splitting the pie. Hence, the outcome of bargaining where the credible threat of legal sanctions strengthens the position of the creditors in this way leads to an immediately settlement at point C.

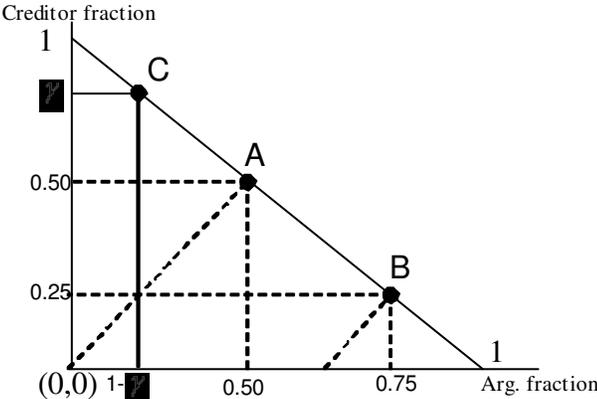
FIGURE 3: Bargaining equilibrium with tough legal sanctions γ



Legal sanction has not so far proved effective in transferring resources to the creditors: but this could change if the legal doctrine of *Pari-Passu* were to be adopted destroying the distinction between senior and junior debt (and allowing private creditors to seize coupons on performing debt).

The three bargaining outcomes discussed are summarised in Figure 4.

FIGURE 4: Bargaining outcomes ABC



Clearly the effect of inside and outside options could shift the bargaining equilibrium away from point A. In section 2, however, we suggest that both the New York court and G7 have an interest in securing an outcome close to A.

1 (d) Reasons for Delay?

Heterogeneous Beliefs

A key feature of the Rubinstein approach is that agreement is reached immediately. So why the delay in this case? In addition to the political and economic factors discussed below, could it be that there are very different beliefs about these options. Suppose Argentina believes that it has a valuable Inside option β , but that the creditors do not – because, for example, they assume that the IMF, World Bank and G7 will offset these benefits. Then there may be no agreement until beliefs have converged.

Likewise for the outside option. Say the creditors believe that the Courts will award substantial ‘attachments’ in the event that bargaining breaks down. Then they will be inclined to reject the bargaining outcome B and only accept C. but if Argentina does not share this belief there may be no agreement until beliefs converge.

What is the evidence on legal sanctions? So far, legal sanctions seem much less effective than this. But there is talk of applying a principle of *Pari Pasu* (all creditors to be treated equally) which would challenge the key assumption underlying the Dubai proposal namely that private creditors get a residual after the Senior creditors are given full compensation.

What about the value of β , the benefits to Argentina while bargaining? So far they seem considerable, but this may be an illusion if there is the threat of extra ‘punishment’ in the form international pressure imposed by the G7 countries and the institutions they control -- including the IMF and the World Bank.

Political factors and economic recovery

We have been discussing factors that might delay a settlement after bargaining has started. But what were the reasons for the delay in starting to bargain? For it took of almost two years for Argentina to come up with its Dubai offer in September 2003. There are two obvious factors at work here. The first is essentially political: until the elections of March 2003 there was only an interim government in place in Argentina. So delay was because Argentina could not effectively be represented at the bargaining table⁵. The second is economic: both parties foresaw substantial recovery from the depths of Argentine depression - and a corresponding increase in the size of the pie to be divided⁶. In the absence of a complete set of contracts, this can be a good reason for delay, Merlo and Wilson (1998). Such an interpretation seems to accord with what Finance Minister Roberto Lavagna argued at the time.

⁵ This argument, suggested to us by Daniel Heyman, is developed in more detail in Bruno (2004).

⁶ For this argument, we are grateful to Stephen Morris.

SECTION 2: Reshaping the International Financial Architecture: the biggest game in town?

The setting

In the Introduction we discussed how the process of restructuring is being conducted in accordance with rulings from a Manhattan courtroom presided over by Judge Griesa. But factors which we take as given in a bargaining game are issues that the judge can decide. It is for him to rule on whether Argentina is bargaining in good faith for example, and to decide what assets, if any may be attached by the creditors who are suing for the full value of Argentine bonds⁷. The debtor can behave strategically too. Recently the President Kirchner of Argentina has been exploring the possibility of using the reserves to pay off the IMF in full without any need for a rollover. In this way he would be free of IMF conditionality. Creditors would doubtless see this as a threat to their bargaining position: a privileged creditor is being paid, early and in full, in order to leave the debtor free of macroeconomic monitoring and control.

The Players

What happens in the courtroom may have profound implications for the international financial system. In this section, the level of legal sanctions imposed by the Judge and the style of bargaining adopted by Argentina are not treated as given parameters. Instead they are treated as matters of strategic choice in a simple game played between Judge Griesa and the representative of Argentina.

Their Actions

The actions open to the two players and the payoffs they provide are indicated in Table 3. Note that Judge Griesa can choose to act with a *Light touch*, holding vulture funds at bay for example so as to allow other creditors to decide on offers to swap debt. This action is indicated with label (L) in the table. Or he can instead act more aggressively - by questioning the legality of discriminating between senior and junior creditors as Argentina is doing, for example. Allowing creditors to attach funds destined for such creditors would greatly strengthen the bargaining position of private (junior) creditors: and depriving the IMF of seniority could put in peril its activity as supplier of funds to countries in crisis. We refer to this as *Heavy handed* legal action (H). As for the actions open to the other player, the debtor can *bargain in good faith*, providing accurate information about income, assets and economic prospects to the creditors: this action is indicated by label (G). Alternatively the debtor can *bargain aggressively* trying to reduce the power of creditors by putting assets and income out of their reach, labelled (N).

⁷ When informed recently that Argentina had moved \$6 billion of its Central Bank reserves out of the US 'because it was afraid of what might happen to them', the judge demanded that the debtor explain and justify such reserve movements. Is the judge taking this as evidence that Argentina is not bargaining in good faith? Could he go so far as to allow creditors to attach official reserves?

Payoffs

Turning to the payoffs that result from actions taken, for Argentina we use the percentage of the pie that results from using one or other style of bargaining. These payoffs show increasing returns to aggression, unless the judge himself acts with a heavy hand (in which case aggression is powerless against the creditors). As for the Judge, we assume he would like to see a fair bargaining outcome such as that discussed in the previous section. (He ranks that as alpha.) But the judge does not like the lopsided outcomes that arise from aggressive behaviour by the debtor when creditors are being held in check, or by vulture funds who attack a debtor bargaining in good faith. (He ranks these as gamma.) He is not enthusiastic about the case where swap values are determined in a clash of arms between aggressive creditors and powerful vultures. (He gives this a beta.)

The resulting game which could determine the shape of bargaining games to come, is given in normal form in Table 3 below.

Table 3: Argentina vs. Judge Griesa, with G7 on sidelines

	(L) Judge Griesa rules with a Light touch	(H) Judge Griesa rules with a Heavy hand
(G) Argentina bargains in good faith	0.5, α ←	0.25, γ
(N) Argentina bargains more aggressively	0.75, γ ↓ →	↓↑ 0.25, β

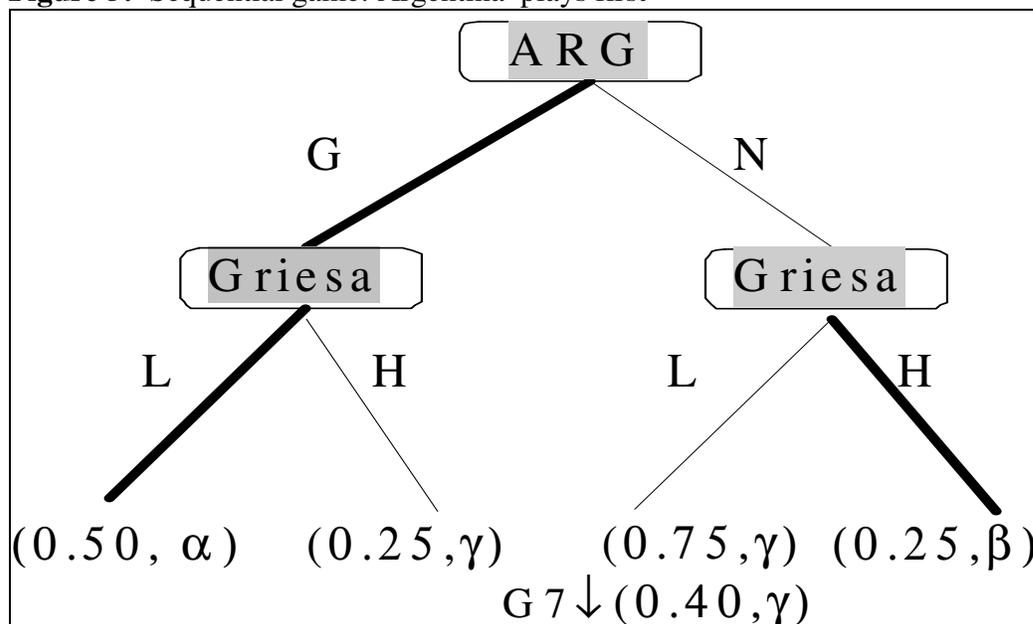
Notes: the subgame perfect Nash equilibrium is shown in bold (0.25, α)

1. Horizontal arrows indicate which action the Judge prefers. Vertical arrows indicate Argentina's preferred action (with indifference shown by two opposing arrows).
2. Pure strategy Nash equilibrium shown in bold.

What does this game imply? Taken at face value, the implications are ominous. The Nash equilibrium in pure strategies indicated in bold is in the South East corner where the debtor bargains aggressively and the Judge unleashes the vultures. Each player is using the best response to the others action: but the outcome is socially inefficient. The entry in the North East corner, for example, offers better payoffs for each player.

Consider, however, the possibility that the Judge uses the prospect of heavy-handed action as threat to ensure good-faith bargaining. This might be achieved by delaying his rulings until after Argentina has taken its action. To see if this is true, the game is displayed in extensive form in figure 5 where Argentina takes action at the node at the top and the Judge responds at the two nodes below. The payoffs are those shown in table 3.

Figure 5: Sequential game: Argentina plays first



Before deciding how to behave, Argentina needs to check how the judge is likely to react. As shown by the heavy lines at the bottom of the figure, the judge will only act tough in response to aggressive bargaining. Knowing this, and comparing its payoffs at the bottom left (0.50) and bottom right (0.25), Argentina will bargain in good faith. In other words, the punishment would act as a credible threat. There is some evidence that, by leaving cases on file to be ruled on later, the judge is doing precisely this.

But the actions of the debtor do not seem to fit this prediction: Argentinean reserves have been moved out of the US and calculations made of whether the IMF can be paid off; and the finance minister has tried to tie his hands to ensure there can be no improvement on the current offer. Why should Argentina play this strategy? Could it be, for example, that the judge's threat is not credible for Argentina because of heterogeneous beliefs? Say, for instance, that its lawyers confidently assert that there is no danger of *Pari-Passu* being adopted⁸, nor of Argentine assets being attached? Then from Argentina's point of view, it's as if the right hand branches in the lower half of figure 5 can be discarded. If the vultures are powerless, aggression will pay as can be seen by comparing the payoffs on the two left hand branches. But if Argentina according chooses not to bargain in good faith, the Judge will have to react. So the outcome reverts to what was observed in the simultaneous game.

As mentioned above, legal actions taken to influence debtor behaviour in this case could seriously threaten the role of the IMF. If the Fund is not given seniority, for example, its shareholders will be extremely reluctant to lend into a crisis: on the contrary, the Fund should be trying to outrun other flight capital! Moreover, operations of the global financial system could be impaired as creditors try to attach payments on US government securities being cleared through the US payments system. Will countries that have created and managed global financial institutions sit idly by? If not, then one might expect to see

⁸ There is a paper written by a distinguished partner of the law firm that advises Argentina which does indeed assert that the doctrine of *Pari-Passu* cannot justify attaching payments on performing sovereign bonds (Buchheit and Pam, 2003)

pressure being put on Argentina to settle without triggering such legal landmines. What would the G7 have to do? Conditional on Argentina's beliefs, what the G7 could do is to reduce the payoffs to Argentina of playing aggressively when the Judge himself takes a light touch. Formally this involves reducing the payoff shown as 0.75 in the bottom row to some number below 0.50 (by increasing the toughness of IMF conditionally, for example, and decreasing transfers of assistance from the World Bank and the supply of financial services from creditor countries).

Conclusion

A striking feature of developments since the IMF's initiative to create a Sovereign Debt Restructuring Mechanism failed, is the extent to which this matters have been delegated to national courts, acting without the services of the IMF. "The main consequence is that, for the first time since the 1920's, third-party mediation is not incorporated with expertise and conditionality" (Sgard, 2004). As this simple exercise suggests, however, dealing with complicated issues of sovereign insolvency could push the capacity of national commercial courts to breaking point. In this case the major players may decide to get back into the game shifting the focus of attention back to Washington instead of New York.

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