Foreign Law Court Enforcement and Delays in Sovereign Debt Restructuring

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by

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Abstract

This thesis seeks to examine contemporary factors that prevent an orderly resolution to a sovereign debt crisis. It comprises of five chapters. The first chapter introduces the research and highlights its main contributions. The second chapter narrates the background and motivation for the study. The third chapter studies a related paper on holdouts in sovereign debt restructuring and finds that, under a discrete time version with two creditors, asymmetric pure strategy Nash equilibria exists. This result, overlooked by the original paper, implies immediate agreement as the time between successive periods tends to zero. The fourth chapter investigates the impact of heterogeneous beliefs on delays in sovereign debt restructuring and finds that parties inefficiently delay settlement when their combined beliefs of court-outcomes are sufficiently heterogeneous. The chapter also explores other model expositions and establishes delay conditions. The fifth chapter studies the implied duty on the debtor to act in good faith in sovereign debt restructuring and is divided into two parts. The first part theoretically examines the efficiency and distributional impacts from enforcing a good faith duty on the debtor when bargaining with heterogeneous creditors. Here, good faith is defined as the non-violation of the court interpretation of the pari passu clause. The second part identifies judicial attempts made to enforce the good faith debtor duty to negotiate and proposes a doctrinal threshold that restricts judicial intervention to situations in which there is clear evidence of a failure, on the part of the debtor, to negotiate in good faith.

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I am fully accountable for any errors or omissions.

Authors Declaration

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Chizoba Uchenna Obi

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Chapter 1

1. Introduction

"Negotiations take place in an ambiguous legal context. Several different jurisdictions, all with different perspectives, influence the process. Different legal orders often reach different conclusions for the same problem. It may not be clear which will prevail (and possibly none of them would prevail), and how the implicit bargaining among different countries' judiciaries will be resolved."

(Guzman and Stiglitz, 2016)

As a public good, sovereign debt restructuring helps a country to share the risks in its income generation. In other words during booms, the country pays a risk premium on its debt but during recessions, the country receives a debt relief through a debt write-down (Varoufakis, 2016). However, extensive empirical research show that sovereign debt restructurings in recessions are normally associated with a general lack of coordination between creditors and debtors, often disorderly and costly to both parties. Sovereign debt crisis – a dramatic rise in sovereign spreads when creditors fear the inability of the sovereign to meet its debt obligation – leaves severe adverse effects on the economy. Not only does the sovereign suffer from discontinued access to international capital market (Eaton and Gersovitz, 1981), creditors hold unto plummeting assets (Ghosal and Thampanishvong, 2012), stock markets collapses as investor and business confidence shrinks (Ahn, 2012), further deepening the recession. Owing to the absence of an international insolvency procedure for implementing sovereign debt restructuring, debt workouts continue to be undertaken on a case-by-case basis. Moreover, proposals for creating a centralized dispute resolution mechanism for coordinating parties have not been successful (Buchheit et al., 2013). Debt restructuring inefficiencies caused by conflicting expectations of court enforcement outcomes under adversarial-type legal systems form the core of this thesis.

Contrary to a defaulted corporate debtor who can file for bankruptcy and face judicial proceedings that become binding on all creditors, a sovereign debtor faces no such protections. The absence of an international bankruptcy court for enforcing debt repayment acts as a major weakness against the sovereign as creditors may easily obtain court

judgements in their favour, but at the same time it could act as a strength due to the limited available attachable assets outside the sovereign's jurisdiction that can be used to enforce those judgments (Buchheit and Gulati, 2017, p. 224). However, such strategic balance in sovereign debt restructuring that drives the incentive to negotiate – that is, the sovereign's unlimited liability and weak enforcement – has been upset by court decisions ensuing from *NML v. Argentina*[1]. The thesis aims to fill in the gap in the economic and legal literature of sovereign debt restructuring by examining current loopholes in the US legal infrastructure governing sovereign debt that gives rise to divergent expectations of court outcomes and consequently hinder any progress towards an orderly resolution to a debt crisis.

The *NML* decision, in favour of the plaintiff creditors, granted an injunction preventing the sovereign debtor from servicing other external debt without satisfying holdout claims. The courts interpreted a contract clause, known as the pari passu clause[2], as requiring equal ranking of all similarly situated external debt and recognised Argentina's then-conduct[3] as violating this promise. This creates a high enforcement environment paving the way for many more lawsuits to come as creditors become more optimistic about court outcomes while debtors embrace weak enforcement. This reinforces the study of conflicting prospects and its effects on debt restructuring.

Although *White Hawthorne v. Argentina*[4] provides some clarification on the combination of conduct that constitutes a breach of the pari passu clause, finding that Argentina's new (good faith) conduct was no longer in violation of the clause, legal scholars agree that the *NML* decision has set a precedent for future disputes, increasing the prospects of holdouts obtaining preferential settlement through seeking NML-style pari passu injunctions and thus causing more disruptions to the market-driven process for restructuring sovereign debt. (Buchheit and Gulati, 2017, p. 229).

There is very limited research in the role courts play towards shaping bargaining outcomes of sovereign debt restructuring. Barely is there any theoretical work modelling court

[1] See *NML Capital, Ltd v Argentina*, No 08 Civ 6978 (TPG) (SDNY 23 Feb 2012); *NML Capital, Ltd v Argentina*, 99 F3d 246, 264 (2d Cir 2012); *NML Capital, Ltd v Argentina*, No 08 Civ 6978 (TPG), 2012 US Dist LEXIS; 167272 SDNY 21 Nov 2012); *NML Capital, Ltd v Argentina*, 727 F3d 230 (2d Cir 2013), cert denied 134 SCt 2819 (16 June 2014).

[2] The pari passu clause is a boilerplate clause that promises to maintain the equal ranking of external private debt.

[3] In the Second Circuit's 2013 Decision (727 F3d at 247), it states "As we have held, by defaulting on the [plaintiffs'] Bonds, enacting legislation specifically forbidding future payment on them, and continuing to pay interest on subsequently issued debt, Argentina breached its promise of equal treatment".

[4] See *White Hawthorne, LLC, et al v The Republic of Argentina* (16-cv-1042 (TPG), Opinion dated 22 December 2016).

decisions in influencing settlement outcomes, neither is there any bargaining framework that considers parties differing expectations of court decisions in sovereign debt disputes and implications that such has on delays in restructuring. Furthermore, there is very little discussion around the legal and economic significance of court enforcement of good faith duties in sovereign debt restructuring. The aim of this dissertation is to fill these gaps.

1.1. Contribution to the literature

The resolution of sovereign debt crisis continues to remain a difficult challenge, with the duration of restructuring taking on average more than six years to complete (Benjamin and Wright, 2016).[5] The economic literature has often overlooked the impediments of the legal system governing sovereign debt due to the notion of unenforceability and general immunity from legal action. As enforcement powers of foreign courts remain limited, the standard view of academics place greater weight on alternative default penalties – such as reputation theories (Eaton and Gersovitz, 1981), direct trade sanctions (Bulow and Rogoff, 1989a), reputation spill-overs on other sectors of the economy (Cole and Kehoe, 1998) – to explain debt repayment.

However, the empirical case for the pure reputation principle remains weak (Trebesch, 2011). For example, Eichengreen (1987) and Lindert and Morton (1989) establish that default history has had little bearing on a sovereign's future borrowing prospects. More often than not, literature has arrived at similarly conclusions (Trebesch, 2011). An interesting point stated in (Bulow and Rogoff, 1989a, p. 158) is that "primary motivation for repayment is the threat of direct sanctions that lenders can impose by going to creditor country courts … Such sanctions can cost defaulting debtor countries their ability to transact freely in the financial and goods markets. For example, if a country repudiates its foreign loans, it will be forced to conduct its trade in roundabout ways to avoid seizure." This leads to the more pertinent role legal enforcement plays in sovereign debt markets.

Schumacher et al. (2015) show that there is an increasing share of sovereign defaults subject to lawsuits in national courts in the US and the UK, finding that both the absolute number and likelihood of creditor litigation has strongly increased from 1976-2010. Schumacher et al. (2018) also find that investor lawsuits significantly decrease the likelihood of market access and significantly increase the duration of restructuring negotiations. There is so far no theoretical literature that models the enforcement of government debt in foreign courts,

[5] And even when they do not take too long, they may not achieve their initial restructuring objectives. Greek debt restructuring in 2012 provides an example. For more details, see (Varoufakis, 2016).

where third party claims may be attached, and that shows the resulting efficiency implications of this type-enforcement on bargaining negotiations.

Thus, the thesis contributes to the literature in two main ways. Firstly, it provides a theoretical framework for modelling different expectations of an adversarial litigation outcome and establishing the effects on delays in restructuring – this would be the first attempt in the sovereign debt literature. This is undertaken in Chapter 4 where it is found that adversarial-type legal systems give rise to heterogeneous beliefs about court outcomes and causes delays in bargaining. Secondly, it reviews the court decision in *White Hawthorne v. Argentina* regarding its good faith assessment of Argentina's conduct, and subsequently builds on a theoretical framework that imposes good faith conduct (i.e. non-voilation of pari passu clause) on the debtor's bargaining behaviour with different creditors. Afterwards, it examines the possibility of a doctrinal threshold that restricts judicial intervention to situations in which there is clear evidence of a failure of good faith duty to negotiate by the debtor. These are undertaken in Chapter 5 and thus revives a discussion of good faith duties in the determination of a contractual dispute in sovereign debt. Chapter 3 provides a short note on a published theoretical piece by Pitchford and Wright (2012) and establishes an immediate settlement result in a simplified model contrary to the paper's findings. Chapter 2 provides the background and motivation of the thesis, where the issues of weak enforcement, absence of a bankruptcy procedure, the rising recourse to legal tools for enforcement and a literature review around these issues are discussed.

1.2. Summary of chapters

The dissertation consists of four self-contained chapters, which are structured along the central theme of the dissertation. Chapter 2 presents the background and motivation for the thesis, as well as containing the literature review. Chapter 3 and Chapter 4 examine theories of delay in sovereign debt restructuring resulting from creditor coordination problems and divergent expectations respectively. Chapter 5 explores the effects of an obligatory commitment to good faith conduct and provides the case for judicial deference in sovereign debt disputes.

1.2.1. Chapter 2: Background and Motivation

Since the late 1970s, many governments issuing foreign debt have been subject to restrictive sovereign immunity laws that make it possible for creditors to sue them upon default (Weidemaier, 2014). However, it remains difficult to enforce court judgements due to the few attachable assets located in foreign jurisdictions. This chapter begins by discussing the

economic literature on sovereign debt enforcement. It then draws on more recent court cases that suggest sovereign debt may be enforced through direct legal sanctions that block access to international capital markets. It then reviews other historic attempts by holdouts who try to utilize other legal means for enforcing debt, and highlights successes and failures. Subsequently it argues that contract terms do matter, stressing the available creditor remedies for enforcement and the collapse of sovereign defences. This will later lead to the key motivation for undertaken this thesis, that is, that the presence of weak enforcement, unlimited debtor liability and current legal systems (being adversarial) provides occasion for conflicting expectations of judicial outcomes and drives delays in restructuring. The chapter then turns to both the theoretical and empirical literature on delay and discusses the literature on litigation optimism.

1.2.2. Chapter 3: Evaluating Pitchford and Wright (2012) Holdout paper

Pitchford and Wright (2012) present a continuous-time dynamic model of sovereign debt restructuring with delay where creditors use mixed strategies to govern their timing decisions to enter, or not to enter, into negotiations with the sovereign. In a model where only one creditor can bargain with the debtor at a time, they state that a pure strategy solution involves players coordinating on entry times. Chapter 3 presents the discrete time version of their paper with two creditors and shows that the asymmetric pure strategy equilibria implies immediate agreement as the time difference between successive periods converges to zero. This result renders their claim of coordination on entry times irrelevant.

1.2.3. Chapter 4: Heterogeneous beliefs in Sovereign debt restructuring

This chapter investigates the impact of heterogeneous beliefs on delays in sovereign debt restructuring negotiations. It comprises of four sections: Firstly, it presents selected case studies demonstrating heterogeneous beliefs of court outcomes. Secondly, it introduces a sequential bargaining model of finite time horizon where each party holds individual beliefs of expected outcomes and shows that parties inefficiently delay settlement when their combined beliefs are sufficiently heterogeneous. It calibrates the model to quantify welfare losses, provides policy implications and concludes that non-adversarial legal systems are required for more efficient restructuring negotiations. Thirdly, the chapter examines other model expositions with evolving beliefs for a shorter time horizon and establishes similar results. Fourthly, it then considers the Yildiz (2003) model with heterogeneous beliefs about

the recognition process. Yildiz found that if the bargaining game is played for a sufficiently long time, players settle immediately. Here I characterize the conditions for delay under common and different discount factors, and with evolving beliefs.

1.2.4. Chapter 5: The Enforcement of a Duty to Negotiate in Sovereign Debt Litigation, with Dania Thomas

Trebesch (2011) found empirical evidence suggesting that "Good faith crisis resolution may help to significantly reduce the collateral damage of default". In other words, when governments are less confrontational or coercive during debt negotiations, the private sector may find it less difficult to borrow internationally. There is a general consensus that good faith conduct amongst bargaining parties has the potential to smoothen – and facilitate sustainable – debt workouts (Goldmann, 2016). A New York court decision in *White Hawthorne v. Argentina* ("*Hawthorne*") revives the discussion of good faith duties in the determination of a contractual dispute. This chapter is divided into two parts.

The first part builds on the theoretical framework presented in Ghosal and Miller (2016) (where debtor bargains with heterogeneous creditors) and imposes an obligatory commitment to a good faith debtor conduct. Here, fulfilment of the good faith duty is defined according to the non-violation of the pari-passu clause, as interpreted by Judge Griesa in Hawthorne. We support our definition of good faith by Professor Summer's excluder analysis which states good faith is not acting in bad faith. Unlike Ghosal and Miller that found bargaining delays under a Lock law, we find that delays are eliminated under the good faith obligation with the impatient creditor and debtor being better off while the patient creditor, who is sufficiently heterogeneous from the impatient type, is worse off.

Having shown the welfare-enhancing benefits of good faith, we are led to the second part of the chapter where we propose a template for judicial deference conditional on debtor satisfying a good faith duty to negotiate. Such opportunity allows the good faith market norms evolved to restrain the consequences of opportunistic behaviour and thereby facilitate successful debt workouts. In addition, our proposal is further justified by the high-enforcement environment created by the court injunction that ensued *NML v. Argentina*. Thus we clarify the nature of a good faith determination in a contract law dispute involving sophisticated commercial parties and assess the case for the satisfaction of a threshold determination of the good faith duty before the ratable payment interpretation is triggered. In the presence of a clear evidence showing the debtor's failure to negotiate in good faith, ratable payment interpretation and the injunction may then be applied.

Chapter 2

2. Background and Motivation

2.1. Overview of sovereign debt enforcement

The fundamental issue with sovereign debt in comparison to corporate debt has been the general lack of contractual enforcement mechanisms due to the doctrine of sovereign immunity. The legal doctrine meant that sovereigns could not be bound by the contracts they sign and thus rendered sovereign debt repayment difficult to enforce. Under the doctrine, the sovereign could protect itself from suit and its assets from attachment within its own (and other countries) jurisdiction. However, following the enactment of the Foreign Sovereign Immunity Act FSIA (1976) in the US and the State Immunity Act SIA (1978) in the UK, the doctrine of sovereign immunity has been weakened to allow lawsuits against sovereigns relating to commercial transactions (Weidemaier, 2014). As the issuance of sovereign debt is recognised as a commercial activity, creditors could sue a sovereign upon default.[6] However, a winning lawsuit is of little significance if accompanied by unsuccessful attachments on debtor's assets. For instance, Swiss company Noga faced several failed attempts in seizing Russia's assets (Pitchford and Wright, 2012). Consequently, this raises the central question of why sovereigns ever repay their seemingly unenforceable debt. The traditional economic literature suggests that maintaining capital markets access, avoiding direct sanctions and political costs are some of the reasons why sovereigns repay, thereby treating the law of contracts with periphery interest.[7] But in reality defaults do occur and thus these theories are insufficient to explain sovereign debt repayment.

Recent court cases suggest enhanced sovereign debt enforcement through direct actions of creditors preventing the sovereign from normal credit market access. This type of sanction stems from the fervent efforts of creditors using foreign courts to limit the debtor's access to

[6] Sovereign bonds governed under domestic law faces less litigation threat compared to bonds governed under foreign law as governments could change domestic law when confronted with a sovereign debt restructuring. More details provided below.

[7] See more details on traditional theories of sovereign debt in (Sturzenegger and Zettelmeyer, 2007, Chapter 2)

capital markets. For example, following the implementation of the Brady Plan[8] in Peru, Elliot Associates – a hedge fund who refrained from participating in the deal after purchasing Peru's distressed debt at a large discount – obtained a summary judgment against Peru in New York and was granted an injunction relief by a Belgian court to stop debt repayments on Peru's Brady bonds. The ruling brought Peru to the brink of default and as a result it quickly reached a settlement.[9] Furthermore, in 2010, NML Capital, a subsidiary to Elliot Associates, obtained an injunction preventing Argentina from servicing its debt payments on its 2005 restructured bonds unless it made ratable payments to NML (Miller and Thomas, 2007). Prior to the modern era, market participants did not believe that such legal tactics played any role in incentivizing sovereign debt repayments (Buchheit and Pam, 2004). However, given more recent enforcement orders, it is clear that such legal techniques could work towards discouraging default, as well as placing creditors at a higher bargaining stance during restructuring negotiations. Hence, court outcomes play a much larger role in recent times in shaping default incentives and bargaining positions.

2.1.1. Economic Literature on Sovereign Debt Enforcement

How is debt enforceable? Why do creditors lend to sovereigns even in the presence of weak contractual enforcement? What can a creditor do its capacity to enforce debt repayments and what are the other mechanisms used to enforce debt? In this section, we examine these questions in turn and identify majorly discussed drivers of sovereign debt enforcement which rely on the ability of creditors to impose default costs on debtors, such as trade sanctions, exclusion from credit markets and litigation. We later conclude that changes in the law in the last 30-40 years as well as the development of new legal strategies have significantly enhanced creditor enforcement actions against defaulted sovereigns.

Extensive historic economic literature on sovereign debt advocates the use of non-legal enforcement mechanisms to justify sovereign debt repayment. There is a general consensus that, unlike the corporate world, sovereign debt contracts cannot be enforced due to the doctrine of sovereign immunity, leaving creditors with few legal tools to prevent strategic default. Thus academic literature examines why sovereigns repay in the first place with little or no legal enforcement. Eaton and Gersovitz (1981) provide one of the earliest explanations

[8] "The term "Brady Plan" derives from a March 1989 speech by Nicholas Brady, then Secretary of the United States Treasury, urging commercial lenders to forgive some of the debt that they were owed by less developed countries, restructure what remained, and continue to grant those countries additional loans." For more details, *see Elliott Associates, L.P. v. Banco de la Nacion and The Republic of Peru*, 194 F.3d (2d Cir. 1999).

[9] Although it was largely speculated that Fujimori, Peru's then president, was unwilling to risk the political costs of a default on the Brady bonds (Gulati and Scott, 2013, pp. 15-16).

for the existence of sovereign debt based on a debtor's incentive to sustain credit market access. If borrowing is the only way to insure against output shocks, the threat of permanent exclusion following a default induces repayment. The traditional literature assumes that the marginal return on capital must be above the interest rate otherwise default results. Likewise, Kocherlakota (1996) proposed a model supporting repayment through the aforementioned retaliatory mechanism. He showed that out-of-equilibrium threats to retaliate by stopping future capital market access could support sovereign borrowing and lending and he showed the threats were credible in being subgame perfect (Pitchford and Wright, 2013). Though these papers were very influential, they were heavily criticized as both the creditor and debtor could potentially be better off with renegotiated contracts consisting new lending (Sturzenegger and Zettlemeyer, 2007). Moreover, in response to Eaton and Gersovitz (1981), Bulow and Rogoff (1989a) argue that the sovereign may purchase an insurance contract delivering payments in low output states and thus permanent exclusion as a reason for repayment becomes redundant.[10] Numerous academics within the discipline claim that Eaton and Gersovitz (1981) reputation theory remains unconvincing. In particular, (Lindert and Morton, 1989, p. 3) concludes that creditors do not punish debtors with a prior default history and pay little attention to the past repayment record of sovereign debtors. Their findings weaken the belief that a default penalty ensures repayment.

Several theories between 1980's and the early 1990's asserted the use of direct sanctions to stimulate repayment. Such punishments involve denial of trade credit or seizure of country's trade outside its national boarders. Bulow and Rogoff (1989b) insisted on the use of contracts contingent on such sanctions for non-repayment. Empirical evidence of enforcement through trade sanctions is ambiguous[11] and, as suggested by Sturzenegger and Zettlemeyer (2007), such contracts may be sub-optimal when sanctions harm both parties. In challenging Bulow and Rogoff (1989b), Kletzer and Wright (2000) consider the case of many lenders, where a new lender can violate the sanction agreement. With the original lending relationship restored when sovereign defaults on new lender that violated the sanction agreement, no potential creditor will provide new lending and thus sovereign debt is sustained at first lender.

[10] However, in responding to Bulow and Rogoff (1989a) critique, a number of authors suggested insurance companies may be unable to commit to future payments to defaulted sovereigns as their repayments could be attached by past lenders.

[11] To name a few, Borensztein and Panizza (2010) show that defaulted sovereigns experience a decline in foreign trade. However, Martinez and Sandleris (2011) show that trade between non-creditor nations were hit significantly and thus unexplained by trade sanctions.

Wright (2002) shows that sovereign lending can exist through syndicated lending, where lenders can collectively punish default[12] and those who deviate from the cooperative arrangement are excluded from group. Wright (2002) provides some evidence suggesting collusive punishment to creditors who deviate from debtor's sanction. The paper shows that institutions that lent to Spain in the 1860's, in violation of a market –wide embargo, found their financial transactions disrupted by creditors who respected the embargo. Furthermore on credit market punishments, Amador (2003) shows that sovereign debt can be sustained through political incentives i.e. governments desire to maintain access to the capital markets in the event it becomes re-elected. Other research stresses on the boarder implications on the debtor's reputation following a default. Cole and Kehoe (1998) argue that if borrower is found untrustworthy in one relationship (with lenders), he would be assumed untrustworthy in other relationships such as in matters involving foreign direct investment or in international political cooperation. Thus, sovereign debt is sustained through maintaining other relationships.[13] In addition, sovereigns may wish to repay their debts to avoid adverse knock-on effects on citizens, for instance, a domestic banking crisis (Pitchford and Wright, 2013). Moreover, Sandleris (2008) show that, in a model where government has true information about the productivity level of the country, sovereign may repay debts in order to signal high productiveness to creditors to ensure domestic firms maintain access to capital markets.

In all the above models discussed, default does not occur in equilibrium. This is a reflection of the assumption that contracts are written under the conditions of perfect information such that sovereign's payoffs under default states are guaranteed to be less than payoffs in normal states. Default events could occur in equilibrium if there is limited contracting flexibility such as cashflows varying across different states or incomplete information in sovereign's type (see (Aguiar and Gopinath, 2006), (Tomz and Wright, 2007), (Arellano, 2008)). Cole et al. (1995) study a model in which the gains from access to the capital markets change over time with the country's demand for borrowing which is unknown to creditors. Their model produces defaults along on the equilibrium path of play. Eaton (1996) presents a model of incomplete information about the sovereign's type, where bad types optimally default, good types try to repay and lenders attempt to separate out the types by observing the sovereign's

[12] Collusive punishment to sovereign is not necessary permanent exclusion by group but high interest premiums such that sovereign is far worse defaulting.

[13] Cole and Kehoe (1998) first show that the loss of reputation from default (and the resulting lack of access to future credit) is enough to support repayment, provided there is no ability to save abroad. The Bulow-Rogoff findings of no sovereign lending results when debtor can save abroad and has only one repeated relationship with lenders where the loss of reputation is limited to creditors only.

default history. In a model where a default increases the probability that sovereign is a bad type, they show that bad-type debtors repay in equilibrium in order to maintain a reputation for repayments and thus avoid exclusion from credit markets.

These traditional economic literatures do not account for the changing climate of enforcement strategies creditors may possess that help sustain the market for sovereign lending. Such tactics employed by litigant creditors could block a sovereign from international capital market access. We thus turn to the significance of landmark court decisions made in sovereign debt disputes and the implications they leave on holdout bargaining leverage during restructuring negotiations.

2.2. Legal matters in sovereign default and restructuring

As posed by Weidemaier and Gulati (2014b), if contract law really does not matter, how does one explain the fact that sovereign loans involve detailed contracts, expensive lawyers, and frequent litigation? Since the 1980's, there have been a large number of creditor suits, including several cases in which holdouts have in fact been able to secure better terms than average creditors. A famous early case is *CIBC Bank and Trust Co. (Cayman) Ltd. v. Banco Central do Brazil* (1995).[14]

The Dart family had purchased up to $1.4 billion of Brazilian Multiyear Deposit facility Agreement (MYDFA), a 1988 debt restructuring agreement between Brazil and creditor banks for its previous outstanding debt. Brazil ceased servicing MYDFA debt in 1989 and eventually initiated negotiations leading to a 1994 restructuring under the Brady Plan that was accepted by all its creditors except the Darts. Brazil restructured all debt except for $1.6 Billion, preventing the Darts from becoming the majority debt holder with the right to accelerate outstanding principal and interest payments. The Darts, through CIBC as the holder of record of the debt, sued the Central bank of Brazil in New York, claiming (1) the past due interest under the MYDFA and (2) the right to accelerate the principal and accrued interest payments. The court later sided with the Darts on the first claim, although it declined to allow acceleration of debt. In 1996, Brazil settled, paying the Darts $52.3 million in

[14] See *CIBC Bank & Trust Co. v. Banco Cent. do Brasil*, 886 F. Supp. 1105 (S.D.N.Y. 1995)

Eligible Interest Bonds covering past due interest until the settlement date of the Brady deal April 1994 and $25million cash payment covering interest due on October 1994.[15] Since the litigation-triggered settlement signalled Brazil was going to continue servicing the remaining MYDFA debt, Darts later sold their MYDFA holding for $1.28 billion in Eurobonds. This meant that Darts came out much better than creditors that had accepted the Brady exchange (Sturzenegger and Zettlemeyer, 2007).

In another case, *Elliot Associates, LP v. Republic of Panama* (1997)[16], Elliot obtained judgements against Panama and subsequently settled for its full claim. Elliot extraction of full repayment was due to the attachment order it has secured against a U.S. based asset of a state-owned telecommunications company it was yet to privatize and a large new bond issue in New York. The settlement amount of over $57 million was less than the value of the privatization deal and the proceeds from the bond issue (Sturzenegger and Zettlemeyer, 2007). In this case, the gains from settling holdouts outweighed the cost of doing so.

The prominent 1999 case of *Elliot Associates v Banco de la Nacion and The Republic of Peru*[17] represents a stark example of enforcing debt through interference with future debt repayments. Elliot Associates purchased Peru's non-performing debt at a large discount before Peru finalised its Brady deal in November 1996. Elliot sought an ex parte order of prejudgement attachment on Brady bonds that could be suitable for attachment, and obtained a $57 million judgement against Peru in New York. Subsequently, they were granted an enforcement order by a Brussels appeals court, on an ex parte basis, to prevent Peru from making payments on its Brady bonds. The Enforcement order enjoined Morgan Guaranty Trust Company, the then operator of the Euroclear, from processing payments in respect of Peru's Brady bonds. The order was granted on the basis that Peru violated a pari passu covenant requiring all creditors be paid pro rata in accordance with their claims. Faced with the prospect of defaulting on all its Brady bonds, Peru made an out-of-court settlement of $56.3 million to Elliot on bonds purchased for only $11million with principal $21 million, satisfying almost all claims Elliot sought after.

The Elliot-Peru case seemed to have revealed a powerful mechanism for enforcing claims of holdout creditors through seeking court orders to interfere with payments to creditors who

[15] See (Bloomberg Business News, 1996)
[16] See *Elliott Associates, LP v. Republic of Panama*, 975 F. Supp. 332 (S.D.N.Y. 1997)
[17] See *Elliott Associates, LP v. Republic of Peru*, 12 F. Supp. 2d 328 (S.D.N.Y. 1998)

may have agreed to a debt restructuring. There have been several cases where holdouts attempted to use Elliot's legal strategy, namely the ratable payment interpretation of the pari passu clause, as a creditor remedy. In the case *Red Mountain Finance v Democratic Republic of Congo (2001)*[18], Red Mountain sought a US court order requesting the interpretation of ratable payment be applied to its credit agreement with Congo. Though this was rejected by the court, an order was issued similar to this effect, namely enjoining the Congo from satisfying external debt repayments without making proportionate payments to Red Mountain (Buchheit and Pam, 2004). The Congo later settled the case at about 37 percent of the value of the creditor's claim, making the Congo able to satisfy an IMF debt repayment and resume borrowing from official lenders (Sturzenegger and Zettlemeyer, 2007). In another case, *LNC Investments v Republic of Nicaragua (2003)*[19], LNC sought an injunction preventing Euroclear from processing Nicaragua payments on other bonds on the basis of a breach on a pari passu covenant in Nicaragua's loan agreement.[20] Court granted the injunction and awarded LNC a final judgement over $86 million but later reversed its decision on appeal.[21]

A comparatively recent[22] decade-long legal dispute called the 'sovereign debt trial of the century' *NML Capital v. Argentina* (2001)[23] represents a striking example of leverage in holdout strategies by distressed securities funds. Argentina, forced to default on $82bn worth of foreign bonds December 2001, restructured 93% of its debt by 2010. Exchange bondholders accepted a haircut of roughly 30 cents to the dollar. NML Capital (an affiliate of Elliot Associates) abstained from taking part in Argentina's debt restructuring and pressured for full repayment via litigation. The plaintiff obtained money judgements against Argentina but so far failed to enforce those judgments on Argentine assets. In November 2012, NML argued that Argentina violated its pari passu covenant in its bonds by paying restructured-bond holders without paying holdouts. The New York district court judge presiding over the case ruled in favour of NML, prohibiting the payment of interest to the

[18] See *Red Mountain Fin., Inc. v. Democratic Republic of Congo*, No. CV 00-0164 R (C.D. Cal. May 29, 2001)
[19] See *LNC Investments v Republic of Nicaragua,* Commercial Court of Brussels, Sept. 11, 2003, General Docket No. 240/RK/03, at 16–17, rev'd, Court of Appeal Brussels, 9th Chamber Mar. 19, 2004, General Docket No. 2003/KR/334.
[20] See Public Hearing of Summary Proceedings of Thursday September 11, 2003, *Republic of Nicaragua v. LNC Investments & Euroclear Bank S.A.* (unofficial translation on file with authors).
[21] However, there were unsuccessful attempts attaching the injunction to any of Nicaragua's assets. *See LNC Investments LLC, f/k/a Investments, Inc. ,Appellant v. Republic of Nicaragua*. No. 03-1224.
[22] A relatively few number of Argentina's creditors are still holding out even at the time of writing.
[23] See *NML Capital, Ltd. v. The Republic of Argentina*, 699 F.3d 246-265 (2d Cir. 2012)

bondholders of restructured debt before full repayment of holdout bondholders. The injunction stated that whenever 'Argentina pays any amount due under the terms of the exchange bonds, it must also pay plaintiffs the same fraction of the amount due to them'. [24] This was the ratable payment interpretation that raises novel concerns on the feasibility of future debt restructuring. The injunction has since been lifted after the country reached an agreement with majority of its holdouts, leaving Elliot with a generous settlement of $2.4bn – equivalent to a thousand percentage profit as compared to exchange bond holders that accepted a 70% haircut on their bonds. [25]

From the cases mentioned above, holdouts seem to enjoy more leverage in current times than in past decades. However, as stated in Sturzenegger and Zettlemeyer (2007), the leverage remains limited by the high legal costs, uncertainty involved and forgone debt service on restructured debt. Hence holdout strategies may only be worthwhile for specialized firms with sophisticated lawyers such as Elliot Associates.

2.2.1. Contract terms do matter to aid enforcement or renegotiation

Scholars have attributed the boilerplate nature of sovereign bond contracts to the costs of drafting new terms, including both direct costs and unanticipated costs following market reactions. Additionally, several theories attempt to explain the stickiness of boilerplate terms in contracts. These include learning externalities (the resistance of contracting parties to adopt new terms less understood by the market and potentially erroneously interpreted by courts), network externalities (the reluctance to insert idiosyncratic contract terms not priced by the market, thus reducing the asset's tradability) and negative signalling (sovereign's averseness to insist a change of contract term that increases lending risk) (Gulati and Scott, 2013, p. 36).

However, empirical analysis finds that boilerplate contract terms do change in response to shocks (Choi et al., 2012). Data suggests that not only do the parties change terms to maximise their surplus, but they also modify and clarify contractual language following costly litigation (Gulati and Scott, 2013, p. 43). Recent events following *NML Capital, Ltd v the Republic of Argentina* (2014) rejuvenates the issue of elucidating contract terms. In May 2015, the International Capital Market Association (ICMA) published a new updated Collective Action Clauses (CACs) and aggregated CACs in response to the New York

[24] *NML Capital, Ltd. v. Republic of Argentina*, No. 11-4065 (2d Cir. 2012). See timeline of events from (Jerin, 2014).
[25] For more details, see (Wigglesworth and Moore, 2016).

court's decision following a protracted and costly litigation process. Moreover, the ICMA developed an alternative language for the pari passu clause eliminating the rateable payment interpretation capitalised by NML (International Capital Market Association, 2015). These new revised provisions will now be included in the terms and conditions of sovereign debt contracts, making it harder for holdouts to disrupt future bond restructurings or interfere with debt repayments to exchange bondholders. Thus it can be implied that the evolution of such clauses is evidence to the belief that contract terms do matter.

To summarise, boilerplate terms aids to address both the enforcement problem (sovereign's strategic refusal to pay debt) and the renegotiation problem (sovereign's difficulty to restructure debt) (Choi et al., 2012). As discussed earlier, traditional economic literature advocates the use of non-legal mechanisms to enforce debt repayment. However, since the enactment of the Foreign Sovereign Immunity Act FSIA (1976) allowing lawsuits against sovereigns in the US, and the State Immunity Act SIA (1978) in the UK, there have been several high-profile cases we have considered in this section.[26] Now we turn to the shrinking availability of sovereign legal defenses to mitigate court enforcement.

2.2.2. Sovereign defences to mitigate sovereign debt enforcement

Sovereigns have sought to avoid creditor enforcement action – such as litigation that may pose a threat to debt restructuring – by invoking various legal defences. They have relied on the principles of sovereign immunity, comity, act-of-state doctrine[27], law of Champerty[28] as defences to creditor claims. However, these defences have been largely rejected by US courts and therefore creditors are generally able to obtain money judgments against foreign states in US, though courts have granted stays of litigation pending the restructuring of debt and economy stability (Boccuzzi et al., 2015).

For instance, in the *Allied Bank v Banco Credito Agricola de Cartago (1989)* case, the US appeals court held that defaulting on foreign debt did not constitute an act-of-state and thus

[26] See evidence of increased litigation and money judgements in Schumacher et al. (2015), albeit limited ability to collect on debt as highlighted above.

[27] Acts of state doctrine states that courts should not judge the validity of a sovereigns act committed on its territory. It is a judicially created rule of abstention concerning the justifiability of the acts of foreign governments (Power, 1996).

[28] New York "Law of Champerty" prohibits litigating on a claim purchased exclusively for the purposes of filing a law suit.

Costa Rica defense through this doctrine was not applicable to the litigation.[29] The Second Circuit further asserted that it was of the United States' national interest to ensure that its creditors could resort to legal remedies to enforce debt. As a result, the district court's ruling was reversed in favour of Allied Bank and the motion for summary judgment was granted. However, it was later established that Allied's final settlement was no better than the debt restructuring offer made to other creditors (Sturzenegger and Zettlemeyer, 2007). Nevertheless, it is worth noting that the act-of-state doctrine proved futile for reasons that defaults payable in foreign jurisdiction are not considered sovereign acts worthy of judicial deference (Panizza et al., 2009).

In another case, *Elliot Associates, LP v Banco de la Nacion (1999)*[30]*,* the Second Circuit reversed the district court ruling of committed Champerty, holding that Elliot's purpose of suit was for the collection of debt it acquired and that its purchase of debt was legitimate i.e. to make profit. Again, one of the reasons the appeal court ruled in favour of Elliot was to ensure US-based creditors could enforce debt absent of full performance.[31]

Another example was demonstrated by the Second Circuit decision in *NML Capital v. Republic of Argentina*. Argentina's floating rate accrual notes (FRANs) included default provisions (allowing for acceleration of claims on debt) and interest rate provisions (allowing for interest rate adjustments in accordance to the perceived risk in purchasing Argentine bonds). Following the announcement that it could no longer service its debt, default provisions were being triggered. Argentina appealed that the interest rate provision on its debt should not be enforced because it would be contrary to public policy against inflated interest rates. The Second Circuit rejected Argentina's plea and persisted parties to adhere to the plain language set forth in the terms underlying debt contracts (Lastra and Buchheit, 2015, pp. 112-113).

Thus the above examples have demonstrated the decree of the US courts that contracts are to be enforced according to their terms. However, many sovereigns' assets have proved immune from attachment. Case of *Pravin Banker v Banco Popular del Peru (1997)*[32]

[29]The Court agreed with the United States government amicus brief that the situs of the property at issue was located in the US and thus the act-of-state doctrine – which respects the acts of a foreign sovereign within its own territory – did not apply. For more details, See *Allied Bank International v. Banco Credito Agricola de Cartago*. 566 F.Supp. 1440

[30] See *Elliott Assocs. L.P. v. Banco de la Nacion*, 194 F.3d 363 (2d Cir. 1999)

[31] Id

[32] See *Pravin Banker Associates, Ltd. v. Banco Popular del Peru*, 109 F.3d 852 (2nd Cir. 1997)

provides an example where summary judgment was granted but unsuccessful attachments were made on Peru's assets. Another case is *Kensington v Republic of Congo (2003)*[33] where, similar to *Elliot v Peru (2000)*, creditor sought an order attempting to attach other bondholders payments under the pari passu clause. The motion was denied. Further cases involved the extensive litigation associated in Argentina's 2001 default, where summary judgements were granted in roughly 140 lawsuits, but attempt to attach sovereign assets (for example, central bank reserves) proved futile.[34]

2.2.3. Creditor remedies to enforce sovereign debt

With the exception of legislations like the FSIA and SIA, sovereigns are usually immune from lawsuits in foreign courts under public international law (Choi et al., 2012). Consequently, debtors issue *waivers of sovereign immunity* in bond contracts to enable creditors obtain foreign judgements in the event of default (Weidemaier, 2014).[35] However, such waivers do not guarantee payment, as assets must be found for attachment. It remains difficult for creditors to find and seize assets not protected by immunity (Weidemaier and McCarl, 2015). Aside from a few famous cases such as *Elliot v. Peru (2000) and NML Capital v. Argentina (2012)*, creditors have been largely unsuccessful in recovering payments from courts. In this section, we detail a range of possible terms that could trigger a race to the courthouse by creditors.

Since sovereigns can choose to withdraw waivers of immunity under domestic jurisdiction, debtors adopt foreign *governing law clauses* unconstrained by public international law. The consent to a foreign jurisdiction, such as New York or English Law, means that a creditor's lawsuit will be independent of the government of the sovereign and thus treated fairly as debtors are prevented from strategically changing the law in their favour. Nevertheless, the question remains whether assets located in foreign jurisdiction can be attached (Weidemaier, 2014).

Other clauses that facilitate legal enforcement include *cross-default clauses*. This clause follows that a sovereign's default on one creditor constitutes a cross-default on all other creditors. In other words, in the event that the sovereign stops making payments to one or more creditors, all other receiving creditors could accelerate their future payments (i.e. face value and accrued interest). Furthermore, the *acceleration clause* permits an individual

[33] See *Kensington International Limited v Republic of Congo* (2003) EWCA Civ 709
[34] For more cases, see (Buchheit and Pam, 2004).
[35] Such contracts include Waivers of immunity from suit and/or from execution. Sovereign debt issuances from countries such as Australia, Finland, Portugal, South Africa, and Turkey include both waivers in English-law bonds, albeit include only waiver of immunity from suit in New York-law bonds (Weidemaier, 2014)

creditor to accelerate all future obligations making them all due immediately if a sovereign defaults on its debt. Some acceleration clauses involve a voting threshold over 25% of outstanding bonds before acceleration can take place (Gulati and Scott, 2013, p. 27).

Other types of enforcement clauses that deter the sovereign from securing or making preferential payments to certain creditors are the *negative pledge clause* and *Pari passu clause*. The negative pledge clause prohibits the sovereign from earmarking certain assets or revenue streams to some lenders without equally securing the debt of other bondholders. However this clause does not prevent the debtor from, for example, enacting a law that honours the debt obligations of exchange bondholders before settling other creditors. (Choi et al., 2012). Pari passu clause addresses this problem by precluding involuntary subordination of debt. Thus, the sovereign cannot lower the legal rank of existing debt in favour of future creditors. In sovereign debt issuances, the clause stipulates that "Debt will rank equally in right of payment with all other present and future unsecured and unsubordinated external indebtedness of the issuer" (Buchheit and Pam, 2004). The broader implications of the Pari passu clause suggest that all creditors must agree to a proposed debt restructuring, otherwise the sovereign faces the threat of lawsuit by a non-consenting creditor and thus risks making ratable payments to all other creditors.

To conclude section 2.2, the discussed case studies and enforcement terms suggest that legal disputes are likely to remain an important challenge in future debt crises. Though the proportion of creditor litigation in relation to restructured debt participation is generally small, lawsuits against foreign sovereigns have been on the rise (Schumacher et al., 2015). This suggests that litigation is increasingly perceived as a lucrative outside option for specialised distressed hedge funds. Credit default swaps (CDS) could also be seen as an outside option should the debtor default, as the payments over CDS would be activated in such event. However, there are very limited experiences with settling sovereign CDS contracts (International Monetary Fund, 2013). Nevertheless, the possession of CDS in relation to sovereign debt could jeopardize orderly future debt restructuring.

2.3. Related literature

2.3.1. Overview of theoretical and empirical literature on delay

A perturbing issue, stressed across various classes of the sovereign debt literature, is the duration of a restructuring process. Pitchford and Wright (2007) claim that default takes an average of seven years to resolve, according to the standard definition of default (Standard

& Poors, 2018)[36]. Using alternative definitions of default, Tomz and Wright (2013) found normal credit market access for some countries to be far longer than the default episode. Moreover, Benjamin and Wright (2016) show that levels of indebtedness of sovereign defaulters after restructuring are at least as high as at the point of default.[37] Cruces and Trebesch (2013) find that creditors lose on average 40 per cent as a result of debt restructuring. Certain stands of literature attribute delays to political instability (e.g. elections and leadership changes, resignations and cabinet reshuffles, wars, coups), as opposed to creditor coordination failures. For example, Trebesch (2008) shows that sovereigns more often than creditors are to blame for restructuring delays. They show empirically that political instability and government behaviour (e.g. government's refusal to guarantee for the debt incurred by earlier governments) are more important factors contributing to delay than creditor behaviour (such as holdouts & litigation). Scholars have sought to investigate the reasons for protracted sovereign debt restructuring and associated inefficiencies caused to both the debtor and creditors alike.

A commonly cited explanation for the inefficiencies in sovereign debt restructuring, i.e. its associated delay and related costs, is the lack of symmetric information between the bargaining parties (Pitchford and Wright, 2012). In a world of asymmetric information, neither party may have complete information of the gains from settlement for the other party. An extension of Admati and Perry (1987) bargaining model with two-sided uncertainty is studied in Cramton (1992) where the time between successive offers is set endogenously by the players. In this setting, delay reveals each party's value of a settlement such that a costly delay in making an offer signals a lower value of settlement relative to other player. In other words, a higher bargaining position is signalled through costly delay in making an offer. In a war of attrition game setting, Hörner and Sahuguet (2010) show that investing in resources to signal bargaining strength induces early settlement, rather than through the time cost of delay. Turning to complete information models, Benjamin and Wright (2016) show that delays may stem from commitment problems where the debtor cannot be trusted to honour future debt restructuring agreements, thereby attributing the causes of socially inefficient delays to the lack of enforceability of contracts. Here, for the very same reason that led to the default in the first place, the sovereign may be unable to credibly commit to making

[36]For standard definition of default, see "D" category in Standard & Poors (2018). However, Das et al. (2012) paper reports that debt renegotiations have become quicker since the 1990s, with many bond restructurings being resolved within one or two years and with creditor participation exceeding 90 percent. The only two-outlier cases were Argentina in 2005 and Dominica in 2004.

[37] Supporting evidence is found in Das et al. (2012) showing restructurings can have serious adverse effects on both the domestic and financial sector.

payments on restructured debt. Thus, the creditor may optimally delay a debt restructuring until future default risk is low. Low default risk facilitates the sharing of surplus gained from debt restructuring and here there is a greater amount of surplus to be shared after re-access to capital markets. Thus, bargaining surplus could be endogenously determined such that variations in expected future default risk affect the size of future surplus, which may explain delay. However, none of the existing literatures on asymmetric or symmetric information in bargaining have attempted to explain inefficient delays caused by parties biased expectations of payoffs from negotiation breakdowns, which we study in Chapter 4 of the thesis.

In contrast, Merlo and Wilson (1995) find that delay may be efficient if the size of the bargaining surplus, determined by a stochastic process, can grow in the future. The fact that the surplus may grow at a rate higher than the discount factor generates socially efficient delays. Supporting evidence by Ozler (1993) shows that temporary suspensions of payments by LDC's leading to loan rescheduling during the period 1978-80 had a positive impact on creditors returns as well as reducing the debt service burden on debtor. A bargaining approach applied to explain Argentina sovereign debt swap of 2005 by Dhillon et al. (2006) suggests that negotiators are better off delaying settlement to create some breathing space for economic recovery. Similar findings by Bi (2008) suggest that delay is optimal as bargaining parties can share a larger "cake" once the debtor country has recovered. However, none of these studies have considered the effect of the impending and obstructive nature of creditor lawsuits on debt restructuring processes.

Another explanation of delay is a lack of creditor coordination towards an orderly debt restructuring. In practice, especially relating to Argentina's debt restructuring since 2005, we find that some creditors accept offers earlier, some reject and accept later, meanwhile some reject and litigate in anticipation of full settlement. Pitchford and Wright (2013) highlight some of the reasons for coordination failures including free-riding incentives (on haircuts or negotiation costs of other creditors) and successful litigation in recent past against sovereigns in default. Pre-restructuring litigation could disrupt and thus slow down the restructuring process. However, in cases such as *Pravin Banker v. Banco del Peru* (1997), the court granted the debtor's request for stay of litigation amid fears that it will disrupt ongoing restructuring negotiations (Sturzenegger and Zettlemeyer, 2007). Several policy proposals have advocated instruments helpful towards addressing the creditor coordination problem, such as collective action clauses that allow a supermajority of creditors to bind holdouts to debt restructuring. Such clauses have been adopted under New York Law since 2003. More discussion on this below in section 4.7.

In the next two sections, 2.3.2 and 2.3.3, we draw on the theoretical and empirical literature on optimism in driving bargaining delays, which is relevant for Chapter 4 of the thesis.

2.3.2. Excessive optimism literature

In addition to the aforementioned literatures, a prominent explanation for costly delays is the parties' excessive optimism about their future bargaining power ((Farber and Katz, 1979), (Shavell, 1982) and (Ali, 2006)). They claim that when parties are excessively optimistic about the future there can be no mutually agreed split of the bargaining pie for which all parties would be willing to accept immediately, causing delay in agreement. Additionally, extensive experimental and field evidence also show that people tend to form optimistic beliefs about future uncertainty when bargaining and that this causes impasse (e.g. (Babcock and Loewenstein, 1997)). This evidence suggests that there is a strong positive correlation between the optimism of the parties and the probability that bargaining ends in an impasse (Ortner, 2010). Babcock and Loewenstein (1997) presented evidence illustrating the persistence of self-serving bias despite parties sharing identical information, hence casting doubt on the asymmetric information hypothesis of private information. Babcock et al. (1997) shows that an intervention targeted at debiasing parties' expectations served to reduce bargaining impasse. This provides further support for the importance of the self-serving bias. However, Yildiz (2003) argued that excessive optimism alone cannot explain the observed delays in bargaining. The author introduces a sequential bargaining model in which the players are excessively optimistic about their future abilities to make offers, where making offers is the only source of bargaining power. He shows that when parties are sufficiently optimistic for a sufficiently long time, they reach an agreement immediately in a subgame perfect equilibrium (SPE). The model presented in Chapter 4 contrasts sharply from the existing literatures on excessive optimism by demonstrating that players share optimistic beliefs about outside options endogenously determined during temporary disagreements in negotiations. Moreover, Yildiz's framework does not account for the role of endogenously determined outside options driving delays in bargaining. Moreover, in the chapter we explore the effect of other parameters unique to a litigation process, such as legal costs, on delays in bargaining. We argue therefore that there is no existing theoretical framework that investigates the role of optimism about endogenously determined outside options in explaining delays in bargaining, an inquiry of particular importance in sovereign debt restructuring negotiations.

Further research has examined the role of optimism in bargaining. Simsek and Yildiz (2007) findings suggest that in equilibrium optimistic players with a nearby deadline delay

agreement until the deadline, so-called deadline effect. Additionally, Yildiz (2004) claims that if parties can learn about their bargaining power during the negotiations, optimism may cause long delays in equilibrium by virtue of players expecting that their opponent will revise their own belief having observed delay which signals stronger position. In his model, agreement is reached when it is no longer worthwhile waiting for opponent to learn. Furthermore, evidence by Ali (2006) and Ortner (2010) establish inefficient delays in equilibrium under persistent optimism. Ali (2006) showed that under multilateral bargaining games, there are costly delays in an arbitrarily long finite game, albeit immediate agreement persists with frequent offers. Similarly, Ortner (2010) suggests that under bilateral bargaining environments, inefficiencies disappear when players can make offers arbitrarily frequently in settings where the size of the bargaining surplus is stochastic. More recently, Friedenberg (2017) found that delay may be attributed to second-order optimism, where parties fear to make mutually beneficial offers that are 'better-than-expected', as doing so may cause the opponent to become more optimistic about her future prospects and holdout for an 'even better' offer. These papers highlighted above study complete information bargaining games and as a result, any delay is common-knowledge at the start of the game and not a possibility unlike incomplete information models where for a specific type of player agreement is reached immediately (Yildiz, 2011). The paper in Chapter 4 goes beyond existing theoretical literature on optimism to account for delays in both finite- and infinite-horizon settings where players hold persistent biased-beliefs during negotiations in debt restructuring.

2.3.3. Litigation optimism literature

Further economics and law literature based on models of uncertainty and asymmetric information attempt to explain the failure of reaching settlement (See (Cooter et al., 1982), (Priest and Klein, 1984), (Bebchuk, 1984), (Reinganum and Wilde, 1986), (Nalebuff, 1987), (Spier, 1994, Spier, 1992) and (Farmer and Pecorino, 1996)). Legal scholars and practitioners find that negotiation breakdowns are often attributed to optimistic beliefs shared by competing parties (See (Birke and Fox, 1999), (Kaplow and Shavell, 2002), (Loewenstein et al., 1993)). The model explored in Chapter 4 relates to the simple numerical framework provided in Hay and Spier (1997) demonstrating that parties may find no mutually acceptable settlement if both are sufficiently optimistic about their prospects in court.

Extensive legal literature, starting with the work of Landes (1971), Posner (1973), and Gould (1973), advocate that litigants may have inconsistent priors about the outcome of a trial.[38] Moreover, bargaining literature on litigation suggests that trials are inevitable if it is infeasible to match parties' expectations in court through initial settlement. Our model presented in Chapter 4 challenges the traditional view of litigation that trials are only an outside option in bargaining. Such perspective contrast sharply from sovereign debt litigation cases, which usually forms an integral part of the debt restructuring process and are useful for reducing information asymmetries between parties when pleadings are submitted. The creditor(s) and sovereign debtor then reach settlement upon conclusion of the litigation case. On the matter of updating beliefs, Aumann (1976) finds that – through rational choice theory – parties revise their optimistic assessment of prevailing in litigation downwards once they observe, during the course of bargaining, the optimism of their opponent. In addition, as stated in Spier (2007), litigants revise their beliefs over time according to new information, learning about the underlying merits of the case and being aware of the strategies their opponents employ.

Much research has found that optimism increases the probability of bargaining impasse. Korobkin (2002) studies the role of aspirations in settlement negotiations. He claims that the undesirable consequence of negotiators setting high aspirations is the increased likelihood of bargaining impasse. This is as a result of a reduced bargaining zone which follows from setting high reservations prices. Furthermore, using evolutionary game theory, Bar-Gill (2006) provides a theoretical explanation for the persistence of optimism bias in litigation. The paper states that optimistic players succeed in extracting favourable settlements by credibly threatening to resort to costly litigation. It finds that when the sum of parties' optimism is too high, settlement negotiations fail and a costly trial follows. The paper also reports that the level of optimism required for a breakdown in negotiations is increasing in the cost of litigation, decreasing in the size of judgement and decreasing in the strength of the plaintiff's case. Our findings in Chapter 4 complement that of Bar-Gill (2006) in that players need to be sufficiently optimistic about their prospects in litigation for negotiations to breakdown and that failed settlements are triggered by high judgement values and low legal costs. However, our different approach is to examine the effect of inter-period litigation on final settlement outcomes. Moreover, the model we explore in Chapter 4 departs from this strand of literature when considering an environment of weak contractual enforcement,

[38] See also (Priest, 1985), (Ramseyer and Nakazato, 1989), (Landes, 1993), (Miller, 1993). These papers show that optimism is a major factor causing delays in settlement, triggering costly litigation.

the norm in sovereign debt litigation, where creditors experience difficulties in enforcing their judgement due to limited available attachable assets of the sovereign. Thus, our findings suggest that creditors accept a haircut post-trial by settling for an amount equivalent to the value of the attachable asset, which is less than the judgement claims. This is in sharp contrast with existing literature, for example Bar-Gill (2006), which suggests that the judgement value, decreed by the court, is awarded to the creditor in settlement post-litigation.

Gertner and Miller (1995) state that when parties' belief about the outcome of trial is common knowledge, the parties only fail to settle if the plaintiff's expectation of litigation outcome exceeds the defendant's by the sum of the party's litigation costs (which is the bargaining surplus – savings made from preventing trial). However, due to the common knowledge assumption of optimism, the paper mentions that it seems very unlikely that a party's belief will be observable by the opposition. They further claim that it is difficult to imagine how a party's prior or idiosyncratic information processing can be directly revealed to others. Consequently, diverse literatures have explored the effects of asymmetric information on the equilibrium outcomes of bargaining, where parties have incomplete information about the possible outcome of trial. Here, the evidence suggests that there is a positive probability of breakdown in negotiations (See (Bebchuk, 1984), (Cooter and Rubinfeld, 1989), (Kennan and Wilson, 1991), (Kritzer, 1990), (Spier, 1994)).

Cooter et al. (1982) studies a bargaining model with incomplete information where uncertainty persists because players have unobservable traits which influence their bargaining strategies. As such, the equilibrium concept is a Bayesian Nash equilibrium where the adoption of certain strategies make bargaining less likely to result in early settlement. Our model in Chapter 4 also studies the case of incomplete information but only regarding court-outcomes – everything else is common knowledge between parties. Nalebuff (1987) studies the case of private information where the defendant knows more about the plaintiff's chances of success at trial. In equilibrium, the plaintiff demands more than he wishes to limit the defendant's ability to signal the weakness of the plaintiff's case. In our model, neither player has private information about their chances of success at trial. Furthermore, Spier (1994) looks at the case of two-sided incomplete information where each party possess private information about the future behaviour of the court – the plaintiff private information may concern the value of his damages while the defendants may concern his degree of negligence. (Spier, 1994, Spier, 1992) admit equilibrium strategies in which settlement is always delayed for a duration proportionate to the value of the informed party's private information. Babcock et al. (1995) provides an explanation of bargaining impasse

where disputants preferences are being drawn from different distributions unlike the Priest and Klein (1984) model (where preferences are drawn from same distribution). They ran an experiment to establish the causal link between self-serving bias and settlement behaviour. A key feature of their experiment was that all information (regarding their individual roles, case materials etc.) was shared between parties. They found that their estimates of the judge's decision were systematically different despite the information shared. This points to an interesting insight on information processing which the paper in Chapter 4 also acknowledges – i.e. that parties' beliefs do not necessarily converge pre-trial despite being presented with the same public information.

Priest and Klein (1984) model posits that parties possess imperfect information which causes them to estimate a case's value with error. They show that failed settlements are those in which the plaintiff overestimates and/or the defendant underestimates the expected value of the case at trial, albeit such estimates are assumed to be rational and so parties form unbiased assessments of court decisions, contrary to my proposition that biased expectations are formed by parties. In addition, the paper assumes that parties behave non-strategically with respect to litigation and settlement as if their actions have no effect on current or future actions of the other party. Our model considers a dynamic bargaining framework where the equilibrium outcome depends on strategic actions of players. Loewenstein et al. (1993) tests the Priest-Klein model in an experimental setting, finding that parties assessments of what is considered a fair settlement and their predictions of the judge's award were both biased - the size of which was a strong predictor of settlement failures. Farmer et al. (2004) found evidence on Major League Baseball that settlement failures resulted from parties' (players and clubs) optimism in their offer proposals, with aggressive offers triggering final offer arbitrations. They argue that their results are more consistent with an optimism model than with an asymmetric information model because the "facts of the case" (consisting mostly of player's statistics such as salary, rating & experience) are all public information. A key difference in their theory relative to ours is that we examine civil litigation when applied in sovereign debt context, rather than arbitration. In addition, the arbitrator determines the final offer while in our case, bargaining continues post-litigation.

Bebchuk (1984) presents a screening model where the defendant has private information in regards to her perceived strength of the case – it may be strong (i.e. with a high chance of winning, she is the high type defendant) or weak (i.e. with a low chance of winning, she is the low type defendant). The plaintiff demand screens out weak defendants such that in equilibrium there is a possibility of settlement with weak types and litigation with strong-

types. Here the different information parties have about the likely outcome of the case stem from private information contrary to my proposition. The paper finds that the probability of pre-trial settlement increases with trial costs, decreases with asymmetric information, decreases with higher expected judgement by optimistic litigant, increases with risk aversion.[39]

Similarly, Spier (1992) presents a dynamic extension of Bebchuk (1984) where the defendant holds private information about the value of damages. The plaintiff learns of the strength of her case through making one-sided offers. In equilibrium, a sequence of screening offers are accepted by only certain types of defendants, thus leading to the possibility of delay. Like in all other papers, it is assumed that the court can enforce any judgement against the defendant. Furthermore, Reinganum and Wilde (1986) study a one-period signalling model where the plaintiff has private information about the true level of damages and makes the settlement demand to signal their type. Here, players share common knowledge about the likelihood that court verdict will be in the plaintiff's favour but share asymmetric information about the level of compensation to be awarded by the court. The equilibrium results entail a mixture of settlement and litigation. My bargaining model rests on the premise that parties lack common knowledge of the court verdict – which could either go in the debtor's or creditor's favour – but have symmetric information about other characteristics of the model.

Furthermore, Cooter and Rubinfeld (1989) show that trials could occur in equilibrium when one party underestimates the strength of the opponent's case. By inducing a discovery process of full informational exchange before trial, where parties willingly reveal advantageous facts that correct their opponent's false optimism, the paper finds that it is possible for parties to settle in the discovery stage. Likewise, Priest (1985) "selection hypothesis" model posits that non-settlement pre-trial is driven by imperfect information, causing parties to estimate the value of case with error. Issacharoff et al. (1996) mentions that the source of the imperfect information may be underdeveloped legal norms governing the conduct in-question, or misperceptions about the facts of the case. They find that cases

[39] Bebchuk (1996) considers an n-period bargaining model to explain the reasons why a plaintiff files a lawsuit even though the litigation has a negative expected value. He finds that, provided the plaintiff's legal costs are sufficiently split among the stages of litigation, by backward induction the plaintiff has a credible threat to sue in the first period and thus parties settle immediately. In his model, however, the players have identical expectations over the probability of prevailing at trial.

which go to trial are simply the ones in which the plaintiffs and defendant's errors compound to eliminate the settlement range.[40]

Adding to the literature on private information in bargaining, Hay and Spier (1997) highlights that what may lead to bargaining impasse may include a party's reputational objective misjudge by opposing party. Gertner and Miller (1995) establish further reasons of impasse, showing that a reactive devaluation – a strategic incentive to devalue each other's concessions simply because it is offered by the opponent – can increase delays in bargaining. Hubbard (2013) established similar results showing that in equilibrium, delays in agreement could occur when defendant gains through delay by refusing every settlement offer from plaintiff. The equilibrium strategy here is an inefficient one in which the plaintiff files a costly and detailed complaint in the first period, following eventual settlement in the second period. Gertner and Miller (1995) also mention that lawyer-client agency problems can cause delays in settlement as, for example, the attorney if working on an hourly fee may have an incentive to overstate the strength of a case in order to induce the client to bring the case to court rather than settling. Similarly, as pointed by Issacharoff et al. (1996), some scholars argue that protracted litigation and trials occur because lawyers are compensated on the basis of the amount of time they spend on a case (See (Clermont and Currivan, 1978); (Coffee, 1987); (Mnookin, 1993).

These papers suggest that there is strong association between imperfect information among parties and settlement failures across diverse court cases, resulting in a costly and lengthy litigation process. The model analysed in Chapter 4 adds to the extensive literature on settlement and litigation through investigating the degree to which optimistic beliefs in sovereign debt litigation hinder early settlement in the restructuring of a country's debt.

[40] Issacharoff et al. (1996)also states that, since five percent or fewer of all controversies in the United States reach trial before any resolution of case, cases that proceed to trial do so because of real uncertainty or because of perverse litigant behaviour.

Chapter 3

3. Evaluating Pitchford and Wright (2012) Paper in a Discrete-Time-Two-Creditors Framework

3.1. Introduction

Mixed strategy Nash equilibrium (MSNE) is a solution concept commonly used in strategic form games and has been applied to various disciplines for both theoretical and applied theory considerations. In a Pure-strategy Nash equilibrium (PSNE), there is no strategic uncertainty. Here each player plays their equilibrium strategy which contain a set of actions that constitutes a best response to their opponents set of actions in equilibrium. No player profits from a unilateral deviation from his equilibrium action. A mixed strategy, on the other hand, is a probability distribution over all pure strategies, allowing a player to randomly select a pure strategy. Established by Nash (1950), every finite strategic-form game has a mixed-strategy equilibrium. In a mixed strategy equilibrium, players optimally randomise between (all or a subset of) pure strategies, not necessarily with equal probabilities. Here players have no incentive to deviate from their optimal mixed strategy conditional on opponents playing their equilibrium strategies. Since probabilities are continuous, there are infinitely many mixed strategies available to a player. One of the problems with interpreting a player's equilibrium mixed strategy as a choice of play is the indifference each player holds of all mixed strategies within the support of his equilibrium strategy.

Pitchford and Wright (2012) present a continuous-time dynamic model of sovereign debt restructuring with delay where creditors use mixed strategies to govern their timing decisions to enter, or not to enter, into negotiations with the sovereign. The authors justify the focus on mixed strategies on the basis that pre-existing social norms in sovereign debt restructuring (such as uncommon sovereign defaults and anonymous creditors) would fail parties to coordinate to a pure-strategy equilibrium. They also provide the Harsanyi (1973) reinterpretation of mixed strategies – that each creditor is not fully informed about other creditor's payoff functions due to (small) random variations in payoffs and thus each optimally plays a mixed strategy in response to the uncertainty faced about other creditors'

actions. As a result of these claims, they did not show the asymmetric Pure strategy Nash equilibria (PSNE) that involve creditors coordinating on the order of entry. Moreover, as they work directly at the continuous time limit, it is not possible to study how the asymmetric PSNE change as the time difference between two successive periods tends to zero. This is what we aim to do in this paper. Working with discrete time settings, not only do we show the asymmetric PSNE result but we also establish that it involves immediate agreement as the gap between two periods tends to zero. This renders their claims about players coordinating in the order of entry redundant in continuous time settings.

The paper does not discredit Pitchford and Wright's MSNE solution. What the paper does it to show that there are other equilibrium outcomes without delay that exists within the model framework which was not shown in their paper. In addition, their justification for solely focussing on MSNE is not sufficient as many theoretical papers in sovereign debt restructuring have been able to show that delays can occur in pure strategies. For a discussion of some theoretical papers see section 2.3.1 above.

3.2. Literature review

A body of literature on games with war of attrition have shown that where there exist pure strategy Nash equilibria, immediate agreement results in continuous time settings.[41] Smith and Stacchetti (2002)[42] presents a complete-information continuous-time bargaining model with endogenous war of attrition where players expected continuation payoffs increase as game proceeds and showed that there exists two pure strategy SPE that yield immediate agreement and a continuum of equilibria in mixed strategies that yield delays with positive probabilities. Though we reach similar findings in pure-strategies, our modelling approach contrasts from Smith and Stacchetti (2002). Their paper explores the bargaining problem without temporal monopoly[43] and studies one in which player's actions are governed by their aspiration values (or expected payoffs) which follow a martingale stochastic process. Because of their deviation from temporal monopoly assumptions, they work directly in

[41] The War of Attrition is a classic game of timing first introduced by Maynard Smith (1974) to study the evolutionary stability of certain patterns of behaviour in animal conflicts. The setup is that two players compete for a prize and the player prepared to wait longer wins the prize, but both players incur a waiting cost which is a function of the delay occurred in resolving the conflict.

[42] Smith and Stacchetti (2002) showed that players are engaged in a sequence of wars of attrition until agreement because expected payoff from waiting exceeds that of offering in a bargaining game.

[43] Negotiated offers enjoy a temporary monopoly by avoiding the time cost of delay. A temporal monopoly captures situations where the time cost of each bargaining period plays a main role to players in avoiding delay.

continuous time. In addition, their solution concept differs – they solve for pure strategy or mixed strategy SPE counterparts of an aspirational equilibrium. Our paper rather abstracts away from these complexities by maintaining the Rubinstein bargaining model assumptions of temporal monopoly and solves for the corresponding subgame perfect equilibrium and Nash equilibrium solutions.[44]

Hendricks et al. (1988) present a general framework of war of attrition in continuous time with complete information, generalizing the Bishop and Cannings (1978) model, to allow for asymmetric return functions and arbitrary payoffs in the event that no player ever concedes. They showed that there exists a unique subgame perfect outcome where one of the two players moves immediately with probability one ending the game instantaneously. Furthermore, Bulow and Klemperer (1999) show that even with private information, where player's valuation of the prize item is not common knowledge, a perfect Bayesian equilibrium exists with perfect efficient sorting where the weakest players leave the game instantaneously. Our paper further contrasts from these literature as they assume an exogenous rising sequence of payoffs, contrary to ours which assumes payoffs endogenously increase as the number of players remaining in the game falls. This endogenous increase in payoffs is attributed to reasons of weak contractual enforcement, where (1) the sovereign cannot commit to settling on the same or inferior terms with holdout creditors and (2) the holdouts can extract a higher settlement by preventing the sovereign from re-accessing capital markets. Thus, by solving for the SPE using backward induction, later settlers are paid higher than earlier settlers. Despite rising endogenous payoffs, we show that players settle immediately in pure strategies.

The cited papers have been able to show that equilibrium delay results in immediate settlement in continuous time settings, complementing our results that the asymmetric equilibria involve immediate agreement as the time difference between periods converges to zero.

[44] Rubinstein, A. (1982): "Perfect Equilibrium in a Bargaining Model," Econometrica, 50(1), 97–109.

3.3. Model

There are two symmetric creditors, and a sovereign. All players have complete information, are risk neutral and have a common discount rate r. The game is represented in a discrete time setting of $t = 0,1,2 \ldots \infty$ and begins in $t = t_2 = 0$ after a debt default. The sovereign remains in default until it settles both creditors, after which it is able to re-access world capital markets and gain V (the surplus gross of settlement payments).[45]

In the initial timing stage, denoted by T_2, each of the two creditors chooses some t at which to enter the settlement stage, denoted by S_2. It is assumed that only one creditor can enter a settlement stage at a time and that ties are resolved by a random allocation with equal probabilities. The first creditor who enters S_2 receives his settlement and exits the game at some $t = t_1$. A no-exit situation is characterised by a rejection of settlement offer and follows another round of bargaining until offer is accepted. From $t = t_1 + 1$, the remaining creditor at T_1 decides when to enter settlement stage S_1. The creditor exits the game at some $t = t_0$ after receipt of his settlement. Game ends and sovereign re-accesses the international capital markets.[46] (See Figure 3.1 below).

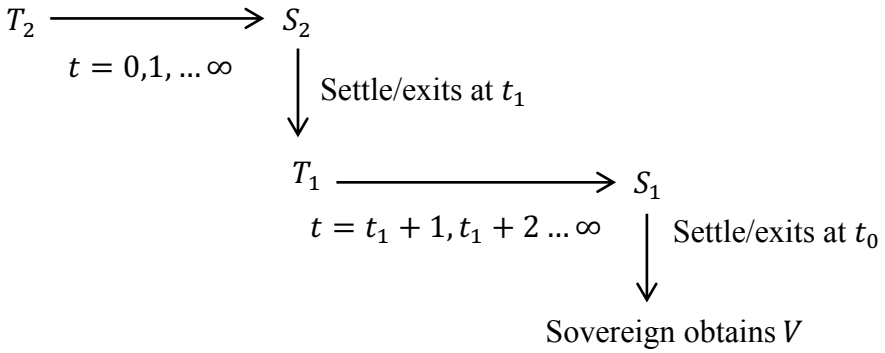


Figure 3.1 – Structure of game

[45] V is interpreted in Bulow and Rogoff (1989a) as the output gain in re-accessing the capital markets, i.e. withdrawal from direct sanctions. In Bulow and Rogoff (1989b), it is the full gains from trade by regaining normal access to trade credit. In Hellwig and Lorenzoni (2009), it is access to future credit. A vast majority of the theoretical literature on sovereign borrowing explain that sovereigns face losses or sanctions if they repudiate on their debt. Such costs may differ from that stated in the theoretical literature on sovereign debt restructuring where default has already occurred. There is no reason to assume the losses prevented from no default are the same as the losses incurred from default. Similarly, it would be misleading to assume that the relative gains from no default are the same as the gains from recovering from a default.

[46] The sovereign's constraint is not only its inability to re-access the capital markets until it settles all creditors but also its inability to pay earlier-settling creditors until it settles holdouts. This was reflected in the US district court judgement against Argentina in the *NML vs Argentina (2012)* lawsuit prohibiting the sovereign from making payments to exchange bondholders without concurrently settling the holdouts. See *NML Capital, Ltd. v. Republic of Argentina*, 699 F.3d 259, 260 (2d Cir. 2012) and *NML Capital Ltd. v. Republic of Argentina*, No. 08-cv-6978 (S.D.N.Y. Dec. 7, 2011)

Subgame 2 starts at the beginning of the timing stage T_2 where the two creditors decide when to enter S_2. After a creditor who enters S_2 exits, the game then proceeds to Subgame 1 where only one creditor remains. Let U_i denote the payoff to the creditor and V_i denote the payoff to the sovereign at the start of subgame i, for $i = 2,1$, where i indicates the number of remaining creditors. Lowercase variables u_i and v_i denote the payoffs at the end of the settlement stage S_i. The creditor who enters S_i would immediately engage in a bilateral bargain with the sovereign that continues until an agreement is made. In bargaining creditor bears a transaction cost for negotiation, such that his payoff is some fraction $\theta \in (0,1)$ of bargained amount.[47]

The settlement stage involves negotiations that follow the random-offers variant of Rubinstein (1982) bargaining game. Once a creditor has entered the settlement stage, nature randomly assigns who makes the offer. Let α denote the probability the creditor is selected and $1 - \alpha$ the probability that sovereign is chosen. Acceptance on either party ends the bargain with creditor exiting the game. Rejection leads to another round of bargaining in the next period where the proposer is randomly selected again. Bargaining continues until an offer is accepted. (See Figure 3.2 below).

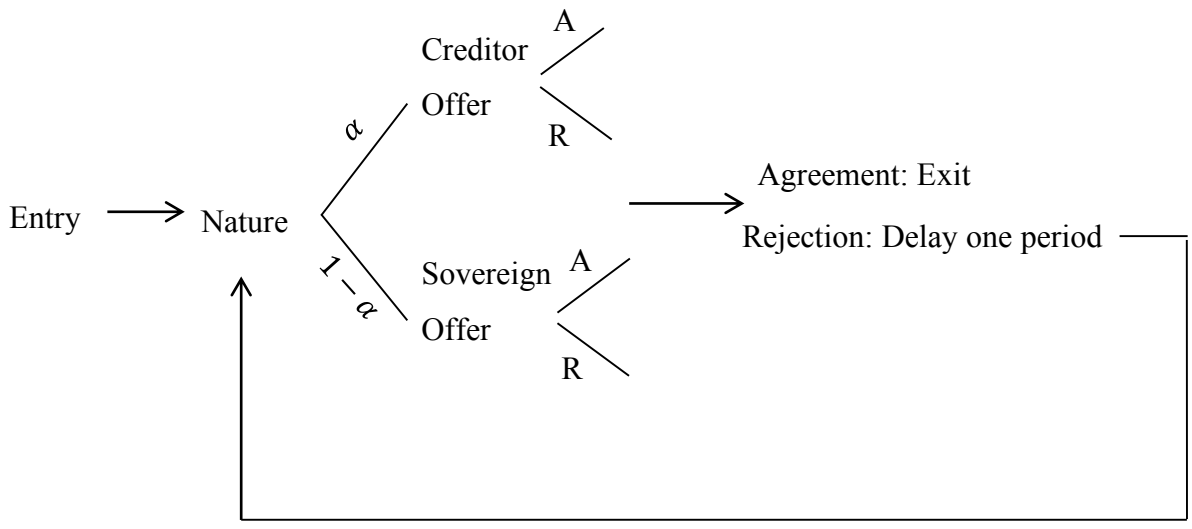


Figure 3.2 – Bargaining sub-game

[47] Pitchford and Wright claim that θ varies with respect to S_i, stating that the transaction costs are weakly larger for earlier settling creditors i.e. $\theta_i \leq \theta_{i-1}$. For simplicity we let creditors bear the same proportional negotiation cost as assumed in their calibration exercise (Pitchford and Wright, 2012, p. 827).

3.4. Equilibrium solutions

Game is solved using backward induction. We obtain solutions to the stages in this following order: S_1, T_1, S_2, T_2. Alternating back through settlement and timing stages in this way, we characterise a Subgame Perfect equilibrium (SPE) of a two-creditor game.

3.4.1. Proposition 1

There exist asymmetric pure strategy equilibria, namely (E, NE) *and* (NE, E)*, in which players coordinate on the order of entry at* T_2.

We first solve the solution from S_1 which begins when the second creditor has entered (Lemma 1a). Following, we solve T_1 taken as given the equilibrium payoffs in S_1 to determine whether the second creditor wishes to enter to bargain with the sovereign (Lemma 1b). Moving back in the tree, we then solve S_2 which begins when the first creditor has entered (Lemma 2a) and then solve the timing stage T_2 to determine which of the two creditors enters S_2 (Lemma 2b).[48] E denotes Enter, NE denotes Not-Enter.

3.4.1.1. Lemma 1a: Bargaining outcome in S_1

The unique SPE pay-off from bargaining stage S_1 is $u_1 = \alpha V\theta$ and $v_1 = (1-\alpha)V$.

Proof:

We first assume SPE payoffs are not unique. Let the set of SPE payoffs for the sovereign be given by $X_1 \equiv \{x_1 : \exists$ an SPE of S_1 with payoffs $(x_1, z_1)\}$. Let the set of SPE payoffs for the creditor be given by $Z_1 \equiv \{z_1 : \exists$ an SPE of S_1 with payoffs $(x_1, z_1)\}$. Suppose that the set of SPE values is non-empty i.e. there exists a (non-trivial) supremum (least upper bound within the set) and an infimum (greatest lower bound within the set). Thus, the sovereign can do no better than $\bar{x_1} \equiv supX_1$ and no worse than $\underline{x_1} \equiv infX_1$. Similarly, the creditor can do no better than $\bar{z_1} \equiv supZ_1$ and no worse than $\underline{z_1} \equiv infZ_1$.

Consider a subgame of S_1 that begins after nature has determined that the creditor makes the offer. Let discount factor $\delta = \frac{1}{1+r} \in (0,1)$. The sovereign will reject all offers less than $\delta\underline{x_1}$, the worst payoff it could get after rejection and thus the creditor's payoff can be

[48] Note that, as in the case of Pitchford and Wright, the analysis has been simplified by the assumption that bargaining does not end until an agreement is reached. This means that in settlement stage S_i, the creditor cannot return to the timing stage T_i, allowing for separability of the solutions of S_i and T_i.

no greater than $V - \delta\underline{x}_1$.The sovereign will accept any offer greater than $\delta\bar{x}_1$, the best it could get after rejection and thus the creditor's payoff can be no less than $V - \delta\bar{x}_1$.

Consider a subgame of S_1 that begins after nature has determined that the sovereign makes the offer. The creditor will reject any offer below $\delta\underline{z}_1$ and thus sovereign's payoff is no greater than $V - \delta\underline{z}_1$. The creditor will accept any offer above $\delta\bar{z}_1$ and thus sovereign's payoff is no less than $V - \delta\bar{z}_1$.

Moving back to the point in S_1 before nature has selected the proposer, we must have:

$$\bar{z}_1 = \alpha\big(V - \delta\underline{x}_1\big) + (1-\alpha)\,\delta\bar{z}_1 \qquad (3.1)^{49}$$

$$\underline{z}_1 = \alpha(V - \delta\bar{x}_1) + (1-\alpha)\,\delta\underline{z}_1 \qquad (3.2)$$

$$\bar{x}_1 = \alpha\delta\bar{x}_1 + (1-\alpha)\big(V - \delta\underline{z}_1\big) \qquad (3.3)$$

$$\underline{x}_1 = \alpha\delta\underline{x}_1 + (1-\alpha)(V - \delta\bar{z}_1) \qquad (3.4)$$

Substituting and solving these equations, we find $\bar{z}_1 = \underline{z}_1 = \alpha V$ and $\underline{x}_1 = \bar{x}_1 = (1-\alpha)V$. This establishes the uniqueness of SPE values.

The SPE strategies are as follows: The creditor always proposes to the sovereign $\delta(1-\alpha)V$ and thus receives $\big(1-\delta(1-\alpha)\big)V$. The creditor accepts any offer greater than or equal to $\delta\alpha V$. The sovereign always proposes to the creditor $\delta\alpha V$ and thus receives $(1-\delta\alpha)V$. The sovereign accepts any proposal greater than or equal to $\delta(1-\alpha)V$. If nature chooses the sovereign to make the offer, the creditor will only accept any offer if it's at least as large as $\delta\alpha V$ since rejection leads to S_1 with payoffs $\delta\alpha V$. This acceptance rule constitutes a best response for the creditor. Therefore, the sovereign proposes the share $\delta\alpha V$ which the creditor immediately accepts. Similar reasoning applies for the case where nature chooses creditor to make the offer. Thus in expected terms, $u_1 = \alpha V\theta$ and $v_1 = (1-\alpha)V$.

3.4.1.2. Lemma 1b: Entry outcome in T_1

With one creditor left at T_1, the creditor immediately enters the settlement stage S_1 at $t_1 + 1$ since his expected discounted payoff is $U_1 = \delta^s\alpha V\theta$ for $\forall s = 0,1,\ldots\infty$ which is maximised at $s = 0$, where s represents the choice of entry from $t = t_1 + 1$. Thus there is

[49] $\bar{z}_1$ is a probability-weighted sum of the best the creditor can do if it makes the offer (where the sovereign offer pinned down to $\delta\underline{x}_1$ and thus the creditor maximises with $V - \delta\underline{x}_1$) and the best it can do if the sovereign makes the offer (where it receives $\delta\bar{z}_1$).

no incentive to delay entry and $U_1 = u_1 = \alpha V\theta$. The sovereign's expected discounted payoff is $V_1 = \delta^s(1-\alpha)V$ which at $s = 0$ is $V_1 = v_1 = (1-\alpha)V$.

3.4.1.3. Lemma 2a: Bargaining outcome in S_2

Similar to lemma 1a, let the set of SPE payoffs for the sovereign be given by $X_2 \equiv \{x_2 : \exists$ an SPE of S_2 with payoffs $(x_2, z_2)\}$. Let the set of SPE payoffs for the creditor be given by $Z_2 \equiv \{z_2 : \exists$ an SPE of S_2 with payoffs $(x_2, z_2)\}$. From lemma 1a, it is understood that the bargained surplus at S_2 has reduced from V to $(1-\alpha)V$ in anticipation of the settlement to the second-settling creditor. It is straightforward to derive SPE payoffs $\bar{z}_2 = \underline{z}_2 = \alpha(1-\alpha)V$, $\underline{x}_2 = \bar{x}_2 = (1-\alpha)^2 V$. SPE strategies remain the same at stated in lemma 1a: When the first-settling creditor enters S_2, immediate settlement occurs. As lemma 1b shows that the second-settling creditor does not delay entry into S_1, the expected discounted payoffs are $u_2 = \alpha(1-\alpha)V\theta$ and $v_2 = (1-\alpha)^2 V$ for the creditor and sovereign respectively.

3.4.1.4. Lemma 2b: Entry outcome in T_2

In every t of the timing stage T_2, creditors simultaneously choose to enter or not-enter. If at $t = 0$ both choose to $Not\ enter$ the settlement stage S_2 , we move over to $t = 1$ within the Timing stage T_2 where the creditors again decide whether or not to enter S_2. If creditors again decide simultaneously to $Not\ enter$ S_2, we move to $t = 2$ where they yet again decide to enter or not-enter. The timing stage T_2 continues in this format until one creditor enters S_2. Let us represent the simultaneous game in normal form:

Creditor 2

Creditor 1		***E***	***NE***
	E	$\frac{1}{2}u_2 + \frac{1}{2}U_1, \frac{1}{2}u_2 + \frac{1}{2}U_1$	u_2, U_1
	NE	U_1, u_2	(Game restarts) Continuation payoff

Table 3.1 – Normal form representation of T_2

Note that $u_2 < U_1$. Take the following pure strategy: with probability $p \in \{0,1\}$ Creditor 1 will $Enter$ in every given t and with probability $q \in \{0,1\}$ Creditor 2 will $Enter$ in every given t. Let us first compute Creditor 1's discounted continuation payoff (bottom-right payoff of the matrix in Table 3.1)

The continuation payoff for creditor 1, π_C^1, is

$$\pi_C^1 = \left[\frac{\delta}{1-(1-p)(1-q)\delta}\right]\left[qU_1\left(1-\frac{1}{2}p\right)+pu_2\left(1-\frac{1}{2}q\right)\right] \tag{3.5}$$

Proof:

Computing for the creditor's continuation payoff, we get:

$$\begin{aligned} pq\left(\delta\frac{1}{2}u_2+\delta\frac{1}{2}U_1\right)+(1-p)q\delta U_1+p(1-q)\delta u_2+(1-p)(1-q)[pq(\delta^2\frac{1}{2}u_2 \\ +\delta^2\frac{1}{2}U_1)+(1-p)q\delta^2U_1+p(1-q)\delta^2u_2 \\ +(1-p)(1-q)[pq\left(\delta^3\frac{1}{2}u_2+\delta^3\frac{1}{2}U_1\right)+(1-p)q\delta^3U_1+p(1 \\ -q)\delta^3u_2+(1-p)(1-q)[\ldots\ldots \end{aligned}$$

Solving and re-arranging:

$$pq\delta\tfrac{1}{2}u_2+p(1-q)\delta u_2+(1-p)(1-q)\,pq\,\delta^2\tfrac{1}{2}u_2+(1-p)(1-q)^2p\delta^2u_2+(1-p)^2(1-q)^2pq\delta^3\tfrac{1}{2}u_2+(1-p)^2(1-q)^3p\delta^3u_2\ldots+pq\delta\tfrac{1}{2}U_1+(1-p)q\delta U_1+(1-p)(1-q)\,pq\delta^2\tfrac{1}{2}U_1+(1-p)^2(1-q)q\delta^2U_1+(1-p)^2(1-q)^2pq\delta^3\tfrac{1}{2}U_1+(1-p)^3(1-q)^2q\delta^3U_1+\cdots$$

Factorising:

$$\begin{aligned} \frac{1}{2}u_2[pq\delta+(1-p)(1-q)pq\delta^2+(1-p)^2(1-q)^2pq\delta^3+\cdots] \\ +u_2[p(1-q)\delta+(1-p)(1-q)^2p\delta^2+(1-p)^2(1-q)^3pq\delta^3+\cdots] \\ +\frac{1}{2}U_1[pq\delta+(1-p)(1-q)pq\delta^2+(1-p)^2(1-q)^2pq\delta^3+\cdots] \\ +U_1[(1-p)q\delta+(1-p)^2(1-q)q\delta^2+(1-p)^3(1-q)^2q\delta^3+\cdots] \end{aligned}$$

$$\begin{aligned} \frac{1}{2}(u_2+U_1)pq\delta[1+(1-p)(1-q)\delta+(1-p)^2(1-q)^2\delta^2+(1-p)^3(1-q)^3\delta^3\ldots] \\ +u_2p(1-q)\delta[1+(1-p)(1-q)\delta+(1-p)^2(1-q)^2\delta^2 \\ +(1-p)^3(1-q)^3\delta^3\ldots] \\ +U_1(1-p)q\delta[1+(1-p)(1-q)\delta+(1-p)^2(1-q)^2\delta^2 \\ +(1-p)^3(1-q)^3\delta^3\ldots] \end{aligned}$$

Simplifying an infinite geometric series:

Let $g = 1 + (1-p)(1-q)\delta + (1-p)^2(1-q)^2\delta^2 + (1-p)^3(1-q)^3\delta^3 + \cdots$

Now $(1-p)(1-q)\delta g = (1-p)(1-q)\delta + (1-p)^2(1-q)^2\delta^2 + (1-p)^3(1-q)^3\delta^3 + (1-p)^4(1-q)^4\delta^4$ ...

Since $g - (1-p)(1-q)\delta g = 1$, therefore $g = \frac{1}{1-(1-p)(1-q)\delta}$

Thus continuation payoff $= \left[\frac{1}{1-(1-p)(1-q)\delta}\right]\left(\frac{1}{2}(u_2+U_1)pq\delta + u_2p(1-q)\delta + U_1(1-p)q\delta\right)$

$$= \left[\frac{\delta}{1-(1-p)(1-q)\delta}\right]\left[qU_1\left(1-\frac{1}{2}p\right) + pu_2\left(1-\frac{1}{2}q\right)\right]$$

Q.E.D

By symmetry, the continuation payoffs for creditor 2, π_C^2, is

$$\pi_C^2 = \left[\frac{\delta}{1-(1-p)(1-q)\delta}\right]\left[pU_1\left(1-\frac{1}{2}q\right) + qu_2\left(1-\frac{1}{2}p\right)\right] \quad (3.6)$$

Note that all the subgames in timing stage T_2 are identical. Therefore let us characterise the stationary pure strategy Nash equilibria as follows:

- When $q = 1$, best response for Creditor 1 is $p^* = 0$ as $U_1 > \frac{1}{2}(u_2 + U_1)$. When $p = 0$, best response for Creditor 2 is $q^* = 1$ as $u_2 > \pi_C^2$ for every $\delta < 1$. Thus $(p^*, q^*) = (0,1)$ is a pure strategy Nash equilibrium.

In other words, when Creditor 2 chooses the strategy $Enter$ in every t of T_2, Creditor 1's optimal response strategy is $Not\ Enter$ in every t of T_2. Also, when Creditor 1 strategy is $Not\ Enter$ in every t of T_2, Creditor 2's optimal response strategy is $Enter$ in every t of T_2. If Creditor 1 chooses the pure strategy $Not\ Enter$ in every t of T_2, a pure strategy by Creditor 2 to $Enter$ only after $T > 0$ units of time in T_2 is strictly dominated by the pure strategy $Enter$ in every t of T_2 as $\delta^T u_2 < u_2$. Similarly, if Creditor 2 chooses the pure strategy $Enter$ in every t of T_2, a pure strategy by Creditor 1 to $Enter$ only after $T > 0$ units of time in T_2 is strictly dominated by the pure strategy $Not\ Enter$ in every t of T_2 as $\sum_{t=0}^{\infty}\delta^t U_1 > \sum_{t=0}^{T-1}\delta^t U_1 + \sum_{t=T}^{\infty}\delta^t\frac{1}{2}(u_2+U_1)$, which solves to $\frac{U_1}{1-\delta} > \frac{U_1(1-\delta^T)}{1-\delta} + \frac{\delta^T}{1-\delta}\frac{1}{2}(u_2+U_1)$ and is true since $U_1 > u_2$.

- By symmetry, when $q = 0$, best response for Creditor 1 is $p^* = 1$ as $u_2 > \pi_C^1$. When $p = 1$, best response for Creditor 2 is $q^* = 0$ as $U_1 > \frac{1}{2}(u_2 + U_1)$. Thus $(p^*, q^*) = (1,0)$ is also pure strategy Nash equilibrium.

Therefore, there exists asymmetric pure strategy Nash equilibria namely $(E, NE)\ and\ (NE, E)$ where creditors coordinate on the order of entry. Next we report the result for the continuous time limit case as $\Delta \rightarrow 0$ where Δ represents the time difference between successive periods.

3.4.2. Corollary 1

In the limit, as $\Delta \rightarrow 0$, the asymmetric pure strategy Nash equilibria converges to a game with immediate agreement.

Proof:

The analysis above showed that the whole game ends in $t = 1$ as one creditor at timing stage T_2 immediately enters the settlement stage S_2 at $t = 0$ and settles with the sovereign, thus $t_1 = 0$. This is followed by the timing stage T_1 where the remaining creditor immediately enters settlement stage S_1 at $t = t_1 + 1$ and settles with the sovereign, thus $t_0 = 1$. This result implies that there is trivial delay. Here we show that when the time differences between two successive periods tend to zero, the whole game ends almost immediately.

Let the game be represented as $t = 0, \Delta, 2\Delta \ldots \infty$ and the discount factor be $\delta = \frac{1}{1+r\Delta}$. Note that as $\Delta \rightarrow 0, \delta \rightarrow 1$. Walking backwards from the bargaining outcome in S_1 to the Entry outcome in T_2, we use the results from Lemma 1a – Lemma 2b and show how the equilibrium results change as $\Delta \rightarrow 0$.

The Bargaining outcome in $S_1$and Entry outcome in T_1: In the limit, as $\Delta \rightarrow 0$, the realised discounted payoffs converge to the expected payoffs of $U_1 = u_1 = \alpha V\theta$ and $V_1 = v_1 = (1 - \alpha)V$. Bargaining parties settle immediately in S_1. Creditor has no incentive to delay entry, thus creditor's entry time in T_1 converges to $t = t_1$ and also exit time in S_1 converges to $t_0 = t_1$.

The Bargaining outcome in S_2 and Entry outcome in T_2: Similarly, in the limit, as $\Delta \rightarrow 0$, the realised discounted payoffs converge to the expected payoffs of $u_2 = \alpha(1 - \alpha)V\theta$ and $v_2 = (1 - \alpha)^2 V$. Bargaining parties settle immediately in S_2. We have already showed in

Lemma 2b that creditors coordinate on the order of entry with one creditor entering T_2 immediately i.e. $t_1 = 0$.

Thus as $\Delta \to 0$, the last-settling creditor entry time in T_1 converges to $t = 0$, with his exit time in S_1 converging to $t_0 = 0$. Thus with $\Delta > 0$ but negligibly small, the game ends almost immediately with players splitting the bargaining pie according to their respective bargaining power.

Q.E.D.

The PSNE shows that in the limit, there is immediate agreement with no delay and since we are attempting to have comparable results with the Pitchford and Wright paper, which models in continuous time settings, we look at the case for when $\Delta \to 0$.

By letting $\Delta \to 0$, we capture the possible speedy nature of the bargaining process between the debtor and its creditors. After the debtor has made an announcement of a default or a possible default, he instantaneously attempts to engage in negotiations with creditors to avoid unnecessary delays. Such engagements may be physical (such as a meeting) or electronic (such as emails), which would require allowing for the time interval between successive rounds of bargaining to tend to zero. In addition, when the debtor has settled with a creditor, it is not surprising that the debtor immediately attempts to bargain with rest of creditors through similar engagements. Thus, we look at the case for where $\Delta \to 0$ allowing for quick correspondence between parties.

Notwithstanding, there may be breakdowns in negotiations at any given bargaining phase. However, we do not model this.

3.5. Discussion on robustness

3.5.1. Risk Aversion

In the paper, we assumed players have risk neutral preferences. However, the assumption of linear utility is restrictive, and particularly so if players' behaviour as a function of their preferences is central in determining the possibility of delay. However, if all players have the same risk averse (concave) utility functions, bargaining shares for individual players would not change and thus our equilibrium results of immediate agreement remain the same. If however, for example, the debtor is risk neutral while the creditors are risk averse, we could expect to see that the creditors respective bargaining share will be lower than their equilibrium offers presented above, but we still obtain our result immediate agreement as

their risk averse preferences have been accounted for in their resulting payoffs and does not influence their entry decisions to bargain with the debtor any further. A similar reasoning also applies for the converse (debtor risk averse and creditors risk neutral).

3.5.2. Asymmetric creditors

In the paper, we assumed symmetric creditors. However, creditors may differ in many forms, for example, in their discount rates, bargaining abilities, creditor holdings or even in their risk preference. Let's take one case i.e. different discount factors where one creditor is more patient than the other, albeit $\delta < 1$. It is expected that the impatient creditor receives less than a creditor's equilibrium payoff as stated above, while the patient creditor receives more. Moreover, we are more likely to end up in the pure strategy equilibrium where the impatient creditor enters bargaining with the debtor first, while the patient creditor enters second. Thus, the impatient creditor is even more likely to be worse off. Nevertheless, our equilibrium conditions for immediate settlement should not change since delay is costly. Similarly, when considering the other variations of asymmetry between creditors, a higher equilibrium share will be granted to that which has a higher bargaining power, but immediate settlement still results.

3.6. Conclusion

Pitchford and Wright (2012) focused on a symmetric mixed-strategy SPE of delay where creditors randomise according to the choice of settling now or later. They did not show the pure strategy result where players coordinate on the order of entry, with one creditor entering into negotiations immediately and the remaining creditor delaying entry by reason of each bargaining with the sovereign at a time. We have been able to show that this asymmetric pure strategy solution in discrete time settings involves instantaneous settlement as the time gap between two periods becomes negligibly small, contrary to their claims that players coordinate on their order of entry in the continuous time limit.

Chapter 4

4. Delays in Sovereign Debt Restructuring: Heterogeneous Beliefs and Adversarial Litigation

4.1. Introduction

In the absence of an international bankruptcy regime, a sovereign debtor and its creditors are faced with an incomplete contracting problem, characterised by the uncertainty about a sovereign's ability and/or willingness to pay and creditors' attitude towards a debt restructuring. Consequently, contracts have embedded terms that attempt to address these issues, imposing constraints on both creditors and sovereigns. Despite the insertion and revision of clauses aimed at alleviating some of the inefficiencies in debt workouts,[50] evidence from sovereign debt lawsuits suggest that parties may have heterogeneous interpretations of contractual terms leading up to different expectations of judiciary outcomes.

This chapter analyses the problem of reaching early settlements in sovereign debt restructurings driven by heterogeneous beliefs about creditor-litigation outcomes during temporary disagreements in bargaining. Against the backdrop of an adversarial justice system governing sovereign debt[51], could parties hold heterogeneous priors over court outcomes? This question follows from the observation that bargaining parties receive public signals i.e. publically available information such as court records, official statistics, country reports, newspaper reports etc. Parties could use such public signals to make different inferences about court outcomes prior to bargaining. To what extent can this explain delays

[50] Bi et al. (2011) states that legal innovations, for example minimum participation thresholds (such as Collective Action Clauses (CACs) which allow for a supermajority of bondholders that agree to a debt restructuring to bind all others holders, including those who voted against the restructuring) and defensive "exit consents" or "exit amendments" (which refer to changes in the non-payment terms of the bonds, such as cross-default, listing, and acceleration clauses, potentially impairing the liquidity and litigation prospects associated with a particular bond) can help coordinate creditors and avoid litigation. Also see International Capital Market Association (2014) publishing revised language for sovereign debt issuances to address certain inefficiencies hampering successful completions of sovereign debt restructurings.

[51] The adversarial system is a legal system where two advocates represent their parties' positions before an impartial judge who attempts to determine the truth of the case.

in debt-restructurings? What distributional implications do court decisions have on the bargaining outcome of debt restructurings? This chapter attempts to answer these questions through undertaking a theoretical analysis using legal materials.

This chapter comprises of four main sections: Firstly, it presents selected case studies demonstrating heterogeneous beliefs of court outcomes. It reviews arguments put forward by parties in order to identify heterogeneous beliefs. We specifically study the legal disputes of *NML Capital Ltd. et al v. Republic of Argentina* (2001-2016) and *Elliott Associates, L.P. V. Republic Of Peru* (1996-2000), and investigate the major subjects under which parties had contrasting opinions. Our focus on these particular disputes is due to the availability of extensive legal materials (court pleadings, orders and decisions sourced from argentine.shearman.com and ravellaw.com) that provides clear evidence of heterogeneous beliefs.[52] Secondly, it introduces a sequential bargaining model debt restructuring with finite horizon between two players (one creditor, one debtor).[53] The creditor is left to decide whether to accept or reject a proposed debt restructuring offer by the debtor. If the creditor rejects, he can choose to seek a court-enforcement order during temporary disagreements in negotiation. It is in this disagreement phase that the parties hold heterogeneous beliefs of litigation outcomes. The model solves for the subgame perfect equilibrium of delay. It calibrates the model to quantify welfare losses, provides policy implications and concludes that non-adversarial legal systems are required for more efficient restructuring negotiations. Thirdly, the chapter considers other model expositions with evolving beliefs for a shorter time horizon and establishes similar results of delay. Fourthly, it then considers the Yildiz (2003) model with heterogeneous beliefs about the recognition process. Yildiz found that if the bargaining game is played for a sufficiently long time, players settle immediately. Here I characterize the conditions for delay under common and different discount factors, and with evolving beliefs.

[52] Our case study investigation can also be extended to any sovereign debt lawsuit filed under an adversarial legal system comprising of contrary claims and defences raised by opposing sides in their respective pleadings before the final court verdict is made.

[53] The 'one creditor' assumption is an attempt to abstract away from creditor coordination issues causing delays in sovereign debt restructuring. In other words, it is an attempt to show that delay can still arise in spite of the presence of CAC's. See Pitchford and Wright (2013) on the vast amount of theoretical literature on creditor coordination issues. In addition, allowing for more than one creditor will require accommodating different types of creditors with, for example, a holdout-type creditor being more optimistic in litigation than a normal-type creditor. This will further complicate the analysis and divert the reader's attention away from the central focus of the chapter regarding the impact of adversarial litigation which requires just one creditor to file a lawsuit.

In recognition of the final settlement outcomes from sovereign debt disputes, discussed in section 2.2 above and section 4.3 below, we model an environment in which court decisions can be enforced through court orders – an attachment order or injunction order. Our discussion observes that when a creditor litigates and is successful in obtaining such orders, future negotiations are made against the backdrop of the granted order. For example, if it is an attachment order granted by the court for the satisfaction of the creditor's claim, the creditor could seize the attached sovereign asset should future negotiations fail to recognise the order. Likewise, if it is an injunction order, the court would block payments to other creditors[54] if future negotiations fail to recognise the order. This is the reason why court decisions can be enforced, either through the seizure of an asset or through inflicting pain on the sovereign for non-payment to third party creditors. Landmark sovereign debt cases have shown to support these types of court enforcement.

The rest of the motivation for this chapter comes in two main folds; Firstly, evidence suggests that sovereign debt restructuring negotiations are usually time consuming and that delays are costly to both the sovereign (who faces disrupted access to world capital markets) and creditors (who hold onto illiquid and risky assets).[55] Secondly and more importantly, theoretical literature modelling delays in sovereign debt restructurings have failed to account for the significant role courts play in shaping settlement outcomes.[56] This chapter recognises the very limited application of the existing literature in modelling litigation in sovereign debt markets, see for example Schumacher et al. (2015) noting that the modelling framework from law and economics has scarcely been used to study lawsuits in this area. Consequently, our key contribution is to show the impact of a heterogeneous belief system, emerging from an adversarial jurisdiction governing sovereign debt, in explaining protracted delays in restructuring.

There are two points that need to be emphasized. First, we do not study ex-ante implications on debtor's incentives to default or not given heterogeneous beliefs. As a result, we cannot draw normative conclusions of the impact of clarified contractual clauses on the debtor's or creditor's behaviour pre-default. The chapter rather studies ex-post implications of

[54] Multiple creditors decision-making not modelled in our framework

[55] There is an extensive literature supporting costly delays in sovereign debt restructuring, see for example Guzman (2016) on Argentina's sovereign debt restructuring, (Mariscal et al., 2015, Cruces and Trebesch, 2013), (Sturzenegger and Zettlemeyer, 2007)and (Roubini and Setser, 2004).

[56] Literature on explanations for delays in sovereign debt restructurings include: (Merlo and Wilson, 1998), (Bi, 2008) and (Benjamin and Wright, 2016) on uncertain recovery; (Bai and Zhang, 2012)on bank loans vs bonds with incomplete information about creditors' outside options; (Pitchford and Wright, 2012) on multiple creditors and mixed strategies equilibria; (Ghosal and Miller, 2016) on creditor heterogeneity; (Ghosal et al., 2016) on recovery and signalling of sustainability concerns.

heterogeneous beliefs on the duration of a restructuring process. Second, the model in 4.4 considers a one-shot litigation game after rejection of an initial offer, where the holdout has only one chance to hunt for attachable assets. In practice however, the creditor, having obtained summary judgement, can always launch subsequent proceedings against the debtor after previous court dismissals of attachment. For simplicity of exposition, the model focusses on the presence of heterogeneous beliefs in a one-shot litigation game and in so doing avoids computational issues that arise from the evolution of beliefs with dynamic litigation games.

The rest of the chapter is organised as follows: Section 4.2 discusses the related literature. Section 4.3 provides some suggestive and case study evidence of heterogeneous beliefs. Section 4.4 presents the theory. Section 4.5 solves the equilibrium conditions for delay. Section 4.6 presents calibrated results. Section 4.7 contains a policy discussion and Section 4.8 concludes. An appendix follows with proofs of results (Section 4.9). Subsequently, we look at other model expositions (Section 4.10 – heterogeneous beliefs about inside options and Section 0 – Yildiz heterogeneous beliefs about recognition process).

4.2. Related Literature

Delay in this paper[57] stems from players holding incompatible priors which are common knowledge, unlike many from the strand of theoretical literature that stress asymmetric information in explaining delays in bargaining (See for example (Fudenberg et al., 1985); (Grossman and Perry, 1986); (Bai and Zhang, 2012), (Ghosal et al., 2016) among many others). It is worth noting the distinction between heterogeneous beliefs and asymmetric information in these contexts. The former is concerned with heterogeneous priors while the latter is concerned with posteriors that are heterogeneous. To further clarify, in the case of heterogeneous beliefs, players have different priors over the states of the world commonly known among themselves at the start of the bargaining game whereas in the case of asymmetric information, players have common priors but later receive privately observed signals resulting to different posterior beliefs over the states of the world. Thus, in the case of asymmetric information, players are led to have heterogeneous posteriors because of private signals they receive as the game proceeds. We are not concerned with this case, but rather we are concerned with the first case where players hold heterogeneous priors.

[57] The words paper and chapter are used interchangeably.

The justification of modelling with heterogeneous beliefs, rather than with asymmetric information, about the outcome of litigation follows from the fact that the bargaining parties receive public signals about court-outcomes. It is implausible to explain the different beliefs parties have about court-outcomes on the basis of privately observed signals as all court documentation and records are public. Therefore, any difference in beliefs must be heterogeneous priors.

Our model is perhaps closer to that of Yildiz (2003) heterogeneous beliefs framework which builds on a sequential bargaining model where players are optimistic about their future outside options. Yildiz demonstrates that if the bargaining game is sufficiently long and players perceive the outside options to be independently distributed across time, bargaining will end immediately. Our model contrasts with Yildiz in making outside options endogenous i.e. a function of history being determined by events that occur during temporary disagreements in bargaining. This has led to our main findings that players with excessive optimism are unable to satisfy their continuation payoffs with an immediate distribution of the pie, as opposed to Yildiz framework where players are able to do so.[58] We argue therefore that there is no existing theoretical framework that investigates the role of optimism about endogenously determined outside options in explaining delays in bargaining.

Extensive Law and Economics literature attempt to explain failures in reaching pre-trial settlement using modelling frameworks with uncertainty and informational asymmetries.[59] Much of the literature supports the asymmetric-information hypothesis that postulates private information, held by one or more litigants, as a cause of settlement delays.[60] Our modelling framework can rather be supported by the divergent-expectations hypothesis. Literature motivated by this hypothesis posits that settlement failures result from incompatible expectations of trial outcomes (Sullivan, 2016). A relatable intuition is provided in a simple numerical framework in (Hay and Spier, 1997, p. 5) demonstrating that

[58] Moreover, the structures of the games are different. Yildiz framework is stationary due to every period of the bargaining game being identical to each other while our model is non-stationary due to the first-period being substantially different from that the rest of the periods of the bargaining game. In addition, our model studies the effect of other parameters unique to a litigation process, such as legal costs, on delays in bargaining.

[59] See (Spier, 2007) for a detailed review of the theoretical literature on pre-trial bargaining.

[60] See for example (Cooter et al., 1982) on unobservable traits by disputants; (Reinganum and Wilde, 1986) on plaintiff private information about level of damages and making offer; (Bebchuk, 1984) and (Nalebuff, 1987) on defendants private information about strength of case with plaintiff making offer; (Spier, 1992) on a dynamic extension of (Bebchuk, 1984) where plaintiff makes one-sided offers; (Spier, 1994) on two-sided incomplete (private) information about the future behaviour of the court; (Farmer and Pecorino, 1996) for a comprehensive review of the literature on litigation and settlement under incomplete information.

parties may find no mutually acceptable settlement if both are sufficiently optimistic about their prospects in court. A vast amount of this literature models non-strategic decision-making with respect to litigation and settlement, contrary to our framework.[61] Furthermore, our paper can be supported by the ample amount of experimental and field evidence showing that people tend to form optimistic beliefs about future uncertainty when bargaining and such contributes to negotiation breakdowns.[62] Thus, our paper adds to the literature on self-serving bias that assigns the causes of costly delays to parties' excessive subjective optimism about their future bargaining power. Though this literature criticise adversarial legal systems as given rise to opportunities for diverse expectations of a lawsuit eventually leading to delays in bargaining, none of the literature have modelled the uncertainty and dynamics peculiar to sovereign debt bargaining where there persists both weak enforcement of court judgement and post-litigation negotiations.[63] In our paper, any post-litigation settlement is made against the backdrop of a discovered sovereign asset court-ordered for the satisfaction of creditor's claims. Thus in our paper, players share optimistic beliefs about expected outside options available during post-litigation bargaining.

Our result is more comparable to that of (Bar-Gill, 2006) who, studying the persistence of optimism bias about trial outcomes, finds that optimism increases the expected settlement value and thus increases the probability of impasse. However, our model and solution concept differ in the following respects. Bar-Gill's framework is stationary and static and he used the solution concept of Evolutionary stable strategy, while our model is non-stationary and dynamic and we use the solution concept of Subgame perfect equilibrium. In addition,

[61] For the earliest models concerning party expectations, see (Landes, 1971), (Posner, 1973), (Gould, 1973), (Shavell, 1982). These authors did not explicitly model the bargaining process but simply assumed that a settlement would take place when the reservation value of the plaintiff is less than that of the defendant. In a later model, Priest and Klein (1984) postulate that settlement failures occurs because parties estimate a case's value with error. Estimates in their model are assumed to be rational, contrary to our assumption that parties form subjective, and therefore biased, assessments of court decisions. In addition, their paper assumes that parties behave non-strategically with respect to litigation and settlement, contrary to our proposition where actions by one party affects both current and future actions of the other party.

[62] See for example, (Loewenstein et al., 1993) showing that parties assessments of what was considered a fair settlement and their predictions of the judge's award were both biased – the magnitude of such bias being a strong predictor of settlement failures; (Babcock et al., 1995) establishing a causal link between self-serving bias and settlement found incompatible estimates of judges' decisions despite all information being public; (Babcock and Loewenstein, 1997) also presenting evidence illustrating the persistence of self-serving bias despite parties sharing identical information; (Babcock et al., 1997) showing an intervention targeted at debiasing parties' expectations served to reduce bargaining impasse; (Farmer et al., 2004) finding evidence on Major League Baseball showed that settlement failures, leading to the use of final-offer arbitrations between parties' (players and clubs), resulted from optimism in offer proposals – the chapter's results being more consistent with the optimism hypothesis than with the asymmetric information hypothesis because the "facts of the case" were all public information.

[63] Our theory departs from the literature when considering an environment of weak contractual enforcement, where creditors experience difficulties in enforcing their judgement due to limited available attachable assets of the sovereign debtor.

in considering an environment of weak enforcement, we contrast sharply from Bar-Gill who suggests that the judgement value decreed by the court is awarded to the creditor in a post-litigation settlement. Nevertheless, we complement the result of Bar-Gill (2006) in two ways: Firstly, when the sum of parties' optimism is too high, settlement negotiations fail and a costly trial follows; Secondly, the level of optimism required for a breakdown in negotiations is increasing in the cost of litigation.

4.3. Heterogeneous beliefs

Firstly, we illustrate some examples where both parties may hold contradictory beliefs of the negotiation process in general, leading to possible disagreements in sovereign debt restructuring.

1. *Debtor's willingness to repay debt:* Creditor believes that the default and the proposed haircut are not in-line with government capacity to repay (Bi et al., 2011).[64]
2. *Counterparty's attitude in debt re-negotiations:* Debtor believes that since it is in crisis, creditor will accept a heavy haircut, whilst creditor believes that debtor could undergo austerity measures to repay debt in full. Through this, debtor signals inability to pay while creditor signals refusal to compromise to haircut (Guzman and Stiglitz, 2015b);
3. *Creditor's enforcement tools*: Though there is common knowledge of weak enforcement among parties, the creditor believes that enforcement tools may develop over the course of persisting in litigation, while the debtor believes that legal or other sanctions in the creditor's possession are limited. (Miller and García-Fronti, 2004);
4. *Expected litigation outcome:* Holdout creditor believes that with a high probability it will recover a settlement amount higher than the proposed haircut through

[64] In other words, creditor may believe that the debtor is capable of paying – having observed the set of publicly available indicators including official statistics such as government budget balance, reserves, capital flows etc. – but unwilling to pay. The debtor may believe otherwise, that he is incapable of paying due to other political commitments even though he is willing to pay. Alternatively, the debtor may be unwilling to pay because of certain political constraints independent of the capacity of paying.

litigation, whilst debtor believes otherwise. In other words, both creditor and debtor are optimistic in the event of a lawsuit.[65]

Consequently, different expectations of the negotiation process and litigation outcomes can lead to delays in bargaining. We now provide evidence from the NML v Argentina and Elliot v Peru case study to motivate the examples listed above. Different opinions between the debtor and the creditor were public knowledge through the court pleadings and court decisions.

4.3.1 Case-Study: NML Capital Ltd. V. Republic of Argentina (2001-2016)

The case *NML Capital Ltd et al. V. Republic of Argentina* reflected many disputes over the expected outcome of the lawsuit.[66] Heterogeneous beliefs spanned across a range of subjects detailed in Table 4.1.

Background[67]

In December 2001, Argentina defaulted on its external debt. Its New York-law bonds contained clauses promising to protect holdout creditors from involuntary subordination. One of its key clauses, referred to as the "Equal treatment provision" provides that

"The payment obligation of the Republic under the Securities shall at all times rank at least equally with all its other present and future unsecured and unsubordinated External Indebtedness…"

In 2005, Argentina proposed an exchange offer to holders of defaulted bonds. Its prospectus stated the risks of not participating in the exchange offer, including the following

[65] Distinctively complex from Argentina, another recent illustrative example with official creditors is Ukraine vs Russia, see (Ogirenko, 2016) "Ukraine 'confident' of success in Russian debt lawsuit". In addition, see (Gelpern, 2016, pp. 81-85) on circumstances surrounding the Ukraine vs Russia legal dispute (Russia claiming, inter alia, that Ukraine did not negotiate in good faith and Ukraine claiming payment waiver on basis of Russia's invasion causing economic instability (arguments grounded in common law contract doctrine). Moreover, Gelpern states "In Argentina and Ukraine alike, courts could use guidance on the meaning of equality and good faith in sovereign debt practice, but such guidance is hard to come by because participants in the restructuring process often *disagree* on first principles."

[66] As at the time of writing, there still remains a small minority of holdout bondholders who continue to hold out for a better deal. The majority of the creditors agreed a settlement with the sovereign on February 29, 2016. See *Ladjevardian v. Republic Argentina* No. 06-cv-3276 (TPG) (S.D.N.Y. May. 26, 2016) at 2.

[67] See *NML Capital, Ltd. v. The Republic of Argentina*, 699 F.3d 246-265 (2d Cir. 2012) at 4-14

"Existing defaulted bonds eligible for exchange that are not tendered may remain in default indefinitely… The government has announced that it has no intension of resuming payment on any bonds eligible to participate in the exchange offer…that are not tendered or otherwise restructured as part of such transaction…"

Simultaneously, Argentina legislature passed a law ("Lock Law") declaring that

"The national Executive Power may not, with respect to the [defaulted] bonds…, reopen the swap process established in the [2005 exchange offer]. The national state shall be prohibited from conducting any type of in-court or private settlement with respect to the [defaulted] bonds …"

In 2010, Argentina re-opened the exchange offer and temporarily suspended the Lock Law ("Lock Law suspension"). The Lock Law Suspension contained that

"…it is prohibited to offer the holders of government bonds who may have initiated judicial action, more favourable treatment than what is offered to those who have not done so."

The 2010 exchange offer also included in its prospectus that

"Eligible Securities that are in default and that are not tendered may remain in default indefinitely and, if you elect to litigate, Argentina intends to oppose such attempts to collect on its defaulted debt. … In light of its financial and legal constraints, Argentina does not expect to resume payments on any Eligible Securities in default that remain outstanding following the expiration of the Invitation…"

The holdouts did not participate in any of the swaps. Instead they persisted in litigation by seeking an injunctive relief on the basis of violation of the equal treatment provision. In February 2012, the US district court granted injunctive relief to the holdouts, ordering that

"whenever the Republic pays any amount due under the terms of the exchange bonds, it must concurrently or in advance pay the holdouts the same fraction of the amount due to them" ("Ratable payment").

Table 4.1 – NML v. Argentina Heterogeneous beliefs

Subject	**Holdouts ("NML") belief**	**Debtor's ("Argentina") belief**
Equal treatment provision	The provision was violated by Argentina through not making ratable payments to both types of bonds and giving payment obligations on defaulted bonds a priority behind that of exchange bonds. Equal treatment means servicing both the exchange bonds and holdout bonds according to their due claims.[68]	The provision is only violated when preferential treatment is given to a particular class of bondholders without valid cause. It has been generally understood to forbid only legal subordination. [69] Equal treatment means both the exchange bondholders and the holdouts receive the same payment terms.[70]
Lock law	Argentina legally subordinated its payment obligations on the defaulted bonds through the lock law because the law made it illegal for the country to service the defaulted bonds, thereby rendering them unenforceable in Argentine courts.[71]	The Lock law did not give any other debt legal preference in that it had not given the exchange bondholders a legally enforceable preference over the defaulted bonds in the event of a default on the exchange bonds.[72]

[68] See Response Brief of Plaintiffs-Appellees Aurelius Capital Master, Ltd. *NML Capital v. Republic of Argentina*, No. 12-105-cv(L), 2012 WL 1494911 (2nd Cir. Apr. 17, 2012) at 10
[69] See Response Brief, *supra* note 68 at 17 fn. 8, 18.
[70] See Memorandum of Law of the Republic of Argentina in Response to Plaintiffs Brief on Remand, *NML Capital v. Republic of Argentina*, No. 08 Civ. 6978 (TPG) (S.D.N.Y. Nov. 11, 2012) at 2.
[71] See Response Brief, *supra* note 68 at 7
[72] See Response Brief, *supra* note 68 at 10 fn. 3

Debtor's willingness to pay	In 2012, Argentina amended its Central Bank Charter to permit greater access to the Bank's reserves to service debts. As Argentina was in possession of reserves much greater than the claims of both exchange bondholders and holdouts, it was therefore financial capable of meeting the ratable payment order.[73]	Argentina was not financial capable of paying both the exchange bondholders and the holdouts as to comply with the ratable payment formula would require using foreign currency reserves which are subject to Argentine law and serve for essential central bank stabilising functions.[74]
Equitable defence of Laches[75]	Delay in advancing their claims for equitable relief was due to the efforts in obtaining money judgements and enforcing them.	Plaintiffs delayed in making their claim for equitable relief despite the opportunity to do so.
Processing agents of Argentina	The financial institutions are agents, and not intermediary banks, of Argentina and thus the U.C.C. does not apply.[76] Any financial institution with connection to the payment of the performing debt	U.C.C. bars injunctions from binding intermediary banks that assist in making payments on the exchange bonds.[78] All financial institutions prevented by the injunction from processing

[73] See Joint Response Brief of Plaintiffs-Appellees NML Capital, Ltd. et al, *NML Capital v. Republic of Argentina*, No. 12-105-cv(L), 2012 WL 1406898 (2nd Cir. Apr. 17, 2012), at 50
[74] See Memorandum of Law, *supra* note 70 at 15
[75] Laches is a defence to an equitable action stating that delay in pursuing an equitable claim or remedy may result in the relief/remedy being lost. A statute of limitation prescribes a deadline for bringing actions of certain kinds to court. In this case, the applicable statute of limitation was six years.
[76] See Joint Response Brief, *supra* note 73 at 23. The Uniform Commercial Code (U.C.C) is a set of laws providing legal rules and regulations for commercial transactions in the US. U.C.C. Article §4A 502 cmt. 4 states that "A creditor of the originator can levy on the account of the originator in the originator's bank before the funds transfer is initiated . . . [but] cannot reach any other funds because no property of the originator is being transferred.
[78] See Memorandum of Law, *supra* note 70 at 19

	is an agent of Argentina as they act on behalf of Argentina in processing the payments. [77]	payments are agents of exchange bondholders as Argentina relinquishes all control over the funds.
Wider effects of the order	Markets adjust rapidly to provide an appropriate balance between creditor and debtor's interests, An example is the widespread adoption of Collective Action Clauses that allow restructuring with approval of fewer than all bondholders.[79]	The ratable payment interpretation of the equal treatment clause will render future sovereign debt relief impossible to achieve. Such runs afoul with the US policy in favour of encouraging needed sovereign debt restructurings.[80]

[77] See Memorandum of Law, *supra* note 70 at 3,22
[79] See Response Brief, *supra* note 68 at 32
[80] See Memorandum of Law, *supra* note 70 at 53

4.3.2 Case-Study: Elliott Associates, L.P. V. Republic Of Peru (1996-2000)

Elliott Associates, L.P. (referred herein as "Elliot" or "plaintiffs") *V. Republic of Peru* ("Peru") *and Banco de la Nacion* ("Banco") (collectively "defendants") reflected numerous disagreements on the application of the Champerty defence[81] against satisfaction of money judgements sought by plaintiffs. Players shared heterogeneous beliefs on the following aspects: (1) what constitutes a violation of the New York Champerty law; (2) the interpretation of a payment guaranty within the terms of the contractual agreement, (3) the legitimacy of the debt assignment to Elliot and (4) the wider effects of affirming a Champerty defence in sovereign debt lawsuits. Other contested but relatively minor arguments shared amongst parties were: (5) a proposed exemption of the liability of Banco (a Peruvian stated owned bank) following to a Peruvian government decree declaring impossibility of performance, (6) interpretation of a contract clause that permitted the provision of compound interest according to the applicable law (see Table 4.2 below)

Background[82]

In March 1983, faced with insufficient foreign exchange reserves to service its foreign debt, Peru entered into restructuring negotiations with a committee of its major commercial creditors called the Bank Advisory Committee (BAC) acting on behalf of all affected foreign lenders. The negotiations yielded the Letter Agreements perfected in May 31, 1983. Further restructuring negotiations stalled in 1984 and Peru defaulted on debt to its foreign lenders. In March 1989, the Brady Plan was proposed encouraging commercial bank lenders to participate in a debt-reduction agreement of loans issued mostly by Latin American countries, including Peru. In October 1995, Peru and the BAC announced an agreement in line with the Brady Plan and by June 1996 the Brady Agreement was issued detailing elements of the debt restructuring terms. Only two creditors (Elliot Associates and Pravin Banker Associates Ltd. "Pravin") opted out of the Brady Agreement and resorted to litigation.

In February 1, 1996 the United States District Court, Southern district of New York, entered judgements in favour of the plaintiffs in a related action, *Pravin Banker Assocs. v. Banco Popular del Peru* (another Peruvian stated owned bank) and, a week later, Peru's motion for

[81] The Champerty Law under Section 489 of the New York Judicial Law provides that: "no corporation or association, directly or indirectly…shall solicit, buy or take assignment … of a bond promissory note, bill of exchange, book debt, or other thing in action, or any claim or demand, with the intent and the purpose of bringing an action or proceeding thereon…"

[82] See *Elliott Associates, L.P. v. Republic of Peru*, 948 F.Supp. (S.D.N.Y. 1996) at 1205-1207

an emergency stay was denied by the court. Peru appealed to the Court of Appeals Second Circuit, but the stay was also denied on April 12, 1996. On March 29, 1996 (after the district court's denial of stay in Pravin case) and April 19, 1996 (a week after the appeals court denial of stay), Elliot purchased debt arising from the Letter Agreements in the secondary market. Elliot was assigned all right, title and interest from the debt purchase. Under the Letter Agreements Banco was liable to repay loans and interest. Moreover, pursuant to a guaranty also dated May 31, 1983, Peru guaranteed the repayment of Banco's debt under the Letter Agreements. In May 1996, Elliot and Peru discussed possible terms of settlement but Elliot rejected the Brady Agreement. A month after Elliot demanded that Peru pay the outstanding principal and interest payments and threatened to bring suit otherwise. In September 1996, Elliot's counsel met with Peru's negotiators in an effort to reach settlement, but negotiations failed. The plaintiffs demanded full payment and the defendants suggested Elliot enter the Brady agreement.

Table 4.2 – Elliot v. Peru Heterogeneous beliefs

Subject	**Holdouts ("Elliot") belief**	**Debtor's ("Peru") belief**
Champerty law: violated or not?	Elliot did not purchase the debt with the sole intent and purpose to sue and that thus the statute does not render unenforceable their claims.[83] Their primary goal for purchasing the debt was to be paid in full or otherwise resort to litigation for the collection of the debt acquired.[84] § 489 is a penal statute which should be narrowly construed to the extent that a claim is filed for the sole purpose of obtaining costs, including attorney's fees. Elliot's alternatives to bringing action were the following: (1) Holding and reselling the debt; (2) participating in Peru's privatisation program; (3) Participating in Peru's restructuring, including negotiating to improve restructuring	Elliot purchased the Peruvian debt in violation of the New York Champerty laws. The assignments to Elliot violated the New York Judicial Law § 489, which makes unlawful the purchase of debt "with the intent and for the purpose of bringing an action or proceeding thereon".[86] Elliot's claims are unenforceable under the statute because the Peruvian loans were purchased for the purpose of bringing suit.[87] Champertous intent was inferred from: (1) purchasing the debt at a substantial discount a week after the Court of Appeals denied Peru's motion for an emergency stay in the Pravin case; (2) Elliot knew that Peru was in default when it

[83] See *Elliott Associates, L.P. v. Republic of Peru*, 12 F.Supp.2d (S.D.N.Y. 1998) at 344
[84] See *Elliott Associates, L.P. v. Banco De La Nacion*, 194 F.3d (2d Cir. 1999) at 372
[86] See Elliot v. Peru, supra note 83.
[87] See *Elliott Associates, L.P. v. Republic of Peru*, 948 F.Supp. (S.D.N.Y. 1996) at 1208

	terms for all creditors involved; (4) negotiating separately with Peru to obtain a better deal than the Brady terms.[85]	purchased the debt and (3) Elliot has also sued the Republic of Panama in similar circumstances.[88]
Peru's Guaranty	Peru unconditionally guaranteed payment under the Letter Agreements and is thus precluded from using any defences against fulfilment of its liability under the guaranty.[89]	The waiver provided by the guaranty is ineffective because § 489 is a penal law directed at the public interest and therefore cannot be waived.
Elliot: a legitimate assignee or not?	The provision did not contain any express words of the limitation on assignability, thus no restriction on the type of financial institution. [90]	Elliot was not a proper assignee of the debt because it was not a "financial institution" within the meaning of the loan agreements.[91]

[85] See Elliot v. Peru, *supra* note 83 at 338
[88] See Elliot v. Peru, *supra* note 87
[89] Section 3 of the guaranty provides that Peru shall pay all such amounts "regardless of any law, regulation or order now or hereafter in effect in any jurisdiction…" and that the guaranty shall be "absolute and unconditional irrespective of … any other circumstance which might otherwise constitute a defence available to a ... any obligor".
[90] See Elliot v. Peru, *supra* note 87 at 1211
[91] See Elliot v. Peru, *supra* note 90 at 1211-1212. The 1983 Letter agreements contained an assignment provision stating that the original creditor "may assign all or any part of its interest in this letter agreement to any financial institution".

Wider effects of affirming a Champerty defence	Failure to enforce debt payments will undermine the reasonable expectations about contract law.[92] The holding in favour of the Champerty defence will produce the perverse result that any debtor can post-default prevent assignment of its debt by announcing that it will not satisfy contractual claims unless sued.[93]	Any ruling in favour of granting a writ of attachment to the plaintiffs, perhaps through a collapse of the Champerty defence and entering judgment in favour of the plaintiffs, will undermine the credibility of the Brady process, and leaving harsh results on the Peruvian economy and people.[94]
Exemption of Banco from liability of debt	Peruvian order cannot be recognised in New York because the Act of State doctrine[95] does not apply since the property at issue is located in New York and therefore the Peruvian order has no bearing on an agreement governed by New York.[96]	Banco was excused from liability on grounds that it was impossible for Banco to perform on the 1983 Letter Agreements due to a Peruvian government decree which removed Banco as a debtor under the agreement. As Banco was constrained by the governmental order, Banco was excused of its liability to perform.

[92] See Elliot v. Peru, *supra* note 83 at 345
[93] See Elliot v. Peru, *supra* note 83 at 356
[94] See Elliot v. Peru, *supra* note 87
[95] The Act of State doctrine provides that the United States cannot question the validity of acts of a foreign state within its own territory
[96] See Elliot v. Peru, *supra* note 83 at 358

4.3.3 Link between the case study and the key model parameters

Table 4.3 – Key model parameters from case studies

	Holdouts belief	**Debtor's belief**
Model Parameter	$q_C \in [0,1]$ denotes the creditor's perception of the strength of his own case in litigation	$q_D \in [0,1]$ denotes the debtor's perception of the strength of his own case in litigation
'Heterogeneity in Beliefs' denoted by $\varepsilon \in [0,1]$		
$\varepsilon = q_C - (1 - q_D) = q_C + q_D - 1$		
If $\varepsilon = 0$, beliefs are consistent; If $\varepsilon < 0$, players are pessimistic; If $\varepsilon > 0$, players are optimistic		

4.4 Model

There are two risk neutral players, a sovereign debtor D and a creditor C, with the same discount factor $\delta \in (0,1)$.[97] We consider a T-period bargaining game of debt restructuring, represented in a discrete time setting of $t = 0,1,2,3 \ldots, T-1$. The game begins in $t = 0$ after a bond debt default caused by the unavailability of funds needed to satisfy creditor's outstanding claims.[98] The sovereign immediately makes an initial settlement offer to the creditor. Players bargain over the partition of the cake of size V, which is not accessible until settlement. V is interpreted as the gains from re-accessing the international capital markets that will mark the end of the debt crisis.[99] V could also be interpreted as the gains from maintaining access to the international capital markets absent of any debt default.

The model extends the Rubinstein-Stahl framework where players hold heterogeneous beliefs about outcomes from disagreements in bargaining.[100] Such beliefs are reflected through optimism about court enforcement decisions against commercial assets or payment-streams of the sovereign.[101] Henceforth, we refer to these so-called commercial assets or payment-streams simply as '*sovereign assets',* which become exposed to liquidation or restraint pursuant to a court-enforcement order held in favour of the judgement creditor.[102] In this model, there is incomplete information due to the uncertainty in the court's decision which could either be ruled in favour of the creditor or the debtor. Each player holds a

[97] Creditor C could represent a large group of homogenous creditors (with the same set of beliefs and coordinated strategies) as well as a single creditor.

[98] More specifically, it is assumed that the sovereign defaults because the total outstanding debt claims (principal, plus full accrued interest up to maturity) in present value terms are more than the present value gains from maintaining access to the international capital market that may be used to service the debt up until maturity.

[99] V includes funds raised from any international sovereign bond issuance after a negotiated settlement. For example in April 2016, Argentina issued $16.5billion of dollar-denominated debt to pay off £6.25 billion to holdouts in cash. The rest of the funds were planned to be invested in infrastructure projects. (See (MercoPress, 2016) and (Guzman, 2016)). V may also include gains from renewed trading relationships with international partners, as well as government revenues raised both directly and indirectly from infrastructure projects previously stalled by the initial debt default etc.

[100] In the standard Rubinstein-Stahl model, players share common knowledge about the outcomes of disagreement.

[101] The author acknowledges that the judgement creditor may initially seek a worldwide discovery of assets and if granted, the creditor may then instigate attempted seizures of assets in accordance with the law of the locale (See *NML Capital, Ltd. V. Republic of Argentina*, No. 12-842, 573 U.S. (2014) (slip op., at 1)). However, for the purpose of simplicity, the litigation process modelled in this paper skips this discovery process and considers the creditor's decision to seek an enforcement order against an already-discovered commercial asset or payment-stream belonging to the sovereign.

[102] The court enforcement action in the NML vs Argentina lawsuit involved an injunctive order preventing payments to exchange bondholders until holdouts were settled. We refer to this type of court-enforcement action as a restraint on the use of a sovereign asset. A court enforcement action that involves an execution order is referred to here as a liquidation of a sovereign asset.

subjective expectation of the court's ruling, i.e. the creditor hopes to secure a court enforcement order (in the likes of an attachment order or an injunction), while the debtor hopes for a dismissal of the creditor's motions submitted the court. These heterogeneous beliefs are assumed to be common knowledge and thus there is no asymmetric information between players in the model.

Figure 4.1 below illustrates the timeline of events. At date $t = 0$, D proposes an offer $x \in [0, V]$ for C. If accepted, D keeps $V - x$ and the game ends immediately. If rejected, a one-shot disagreement game $\mathcal{G}$ follows for a unit for time, where C decides between a set of actions $\{S, NS\}$. S denotes the action to *Seek a court-enforcement order* at a cost of a legal fee K_C.[103] NS denotes the action to *Not seek a court-enforcement order*. If action S is made, the debtor has a singleton action set where he defends himself in court at a cost of a legal fee K_D. Heterogeneous beliefs apply only when creditor chooses S. Subsequently, the court runs its verdict on the outcome of the litigation $\Theta \in \{0,1\}$. $\Theta = 1$ indicates creditor successfully secured an enforcement order while $\Theta = 0$ indicates creditor was unsuccessful. The game then continues to $t = 1$ at a cost of a surplus destruction by a factor δ.

If $\Theta = 1$, in $t = 1$ parties negotiate the defaulted debt in recognition of the court order. They bargain according to a random-offers procedure and the game ends following an acceptance or a rejection of an offer. Rejection yields the outside option payoff (See **Remark 1**). *Outside option payoffs*: There are two outside option payoffs. One is associated with the outside option payoff from an attachment order, while the other is associated with that of an injunction order. The reason why both should be considered follows from the court decisions that proceeded NML v. Argentina. The judge presiding over the case made two landmark decisions. One was an injunction order that blocks the sovereign from servicing other types of debt, while the other was the decision authorizing worldwide discovery of the sovereign's assets[104] to determine which assets are suitable for attachment and which are not. As a result of these two landmark decisions, it was important to investigate whether the equilibrium solutions differ in either case. An interesting insight that the paper finds is that that equilibrium outcome in Proposition 2 is the same under the two court orders and thus same under either outside option payoff.

[103] K_C is a lump sum of all legal costs incurred by the holdout creditor, including initial legal fees applicable to obtaining a summary judgement.

[104] See *NML Capital, Ltd. v. Republic of Argentina*, No. 12-842, 573 U.S. (2014)

However, if $\Theta = 0$ or creditor's choice was NS, the bargaining procedure follows a random-offers variant of Rubinstein (1982) bargaining game where nature randomly selects the proposer for each period of the remainder of the game. Let α denote the probability the debtor is selected, so that $1 - \alpha$ is the probability the creditor is chosen to make an offer in every round from $t = 1$. The other party then accepts or rejects the offer. Acceptance ends the bargaining game. Rejection leads to a delay of one period and is followed by another round of bargaining where the proposer is again selected randomly. Bargaining continues in this fashion until the game ends.

O denotes the total outstanding debt claims of the creditor.[105] F denotes the value of the sovereign asset subject to a restraint or liquidation by the enforcement order. K_i denotes the legal cost to player $i \in (C, D)$. Legal cost is incurred irrespective of the outcome of the litigation. We assume $O > V > F > K_i > 0$ for $\forall\, i$. This ordering of parameters is crucial for the following reasons: (1) The sovereign defaults because $O > V$; (2) There is weak enforcement because $O > F$; (3) Players can eventually settle post-litigation because $V > F$; (4) Legal costs are sufficiently low enough to incentivise action S. Let $G = \{1,0, NS\}$ denote the outcome of $\mathcal{G}$, such that $G = 1$ means creditor chose S and $\Theta = 1$; $G = 0$ means creditor chose S and $\Theta = 0$; $G = NS$ means creditor chose NS.

In addition, we assume that the court's decision is final and therefore cannot be reversed or challenged.[106] The following definitions are useful for equilibrium expositions.

Definition 1 (Gains from immediate settlement): In the absence of heterogeneous beliefs, the total gain from immediate agreement is either $V(1 - \delta)$ (when it is anticipated the creditor will choose NS in $\mathcal{G}$) or $V(1 - \delta) + K_C + K_D$ (when it is anticipated that the creditor will choose S in $\mathcal{G}$).

The gains from immediate settlement are the total surplus parties realize from agreement over delay. In other words, it is the total cost of delay that the parties avoid from settling immediately. Thus, in the absence of heterogeneous beliefs, there always exist such gains from immediate settlement and therefore parties settle immediately.[107]

[105] The total outstanding debt claims includes all accrued interest payments and principal amounts.

[106] This assumption ensures the bargaining environment is stationary. Allowing for an appeal process may result in the debtor taking subsequent actions to launch a petition in higher courts against a lower-court ruling in favour of the creditor and thus the game would transit into a non-stationary environment.

[107] Furthermore, Definition 1 suggests that the gains from immediate settlement when the creditor will choose S are higher than the gains from immediate settlement when the creditor will choose NS. This means S is costly for both players.

Definition 2 (Beliefs): Let $q_C \in [0,1]$ denote the creditor's belief of a successful litigation in $\mathcal{G}$ and $q_D \in [0,1]$ denote the debtor's belief of an unsuccessful litigation in $\mathcal{G}$. A successful litigation occurs when a court order is granted in favour of the judgement creditor. The combination of player's beliefs is captured by parameter $y = q_C + q_D$. We say players are optimistic when $y > 1$ and pessimistic when $y < 1$. Beliefs are consistent when $y = 1$.

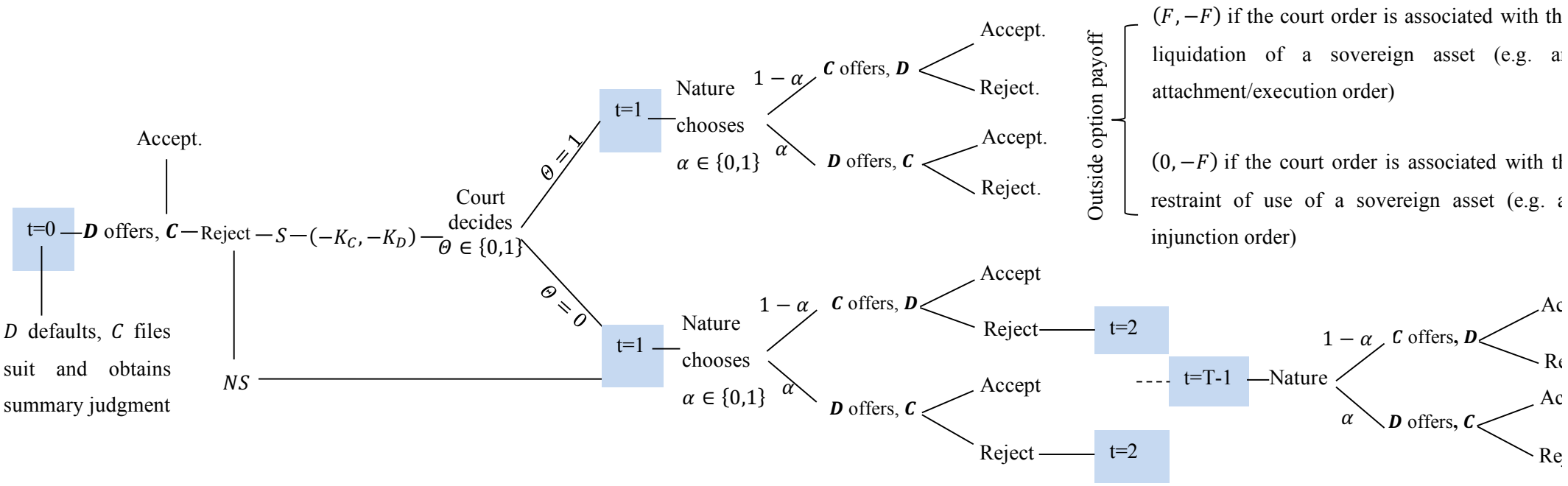
Definition 3 (Degree of optimism): The degree of optimism that generates a delay in agreement at $t = 0$ is measured by $\varepsilon = y - 1 \in [0,1]$. Higher ε means player's beliefs are more optimistic while lower ε means they are less optimistic. When $\varepsilon = 1$, player's beliefs are extremely optimistic. When $\varepsilon = 0$, player's beliefs are consistent.

Consistency of beliefs: Players beliefs are consistent when they have identical beliefs and so there is no optimism. For example, if the creditor believes with probability 0.7 that he will be successful in litigation and the debtor believes likewise that with probability 0.7 the creditor will be successful in litigation (and thus believes with probability 0.3 the creditor will be unsuccessful), this means that the players beliefs are consistent as they share the same expectations of outcomes from litigation. Thus, in this example, $q_C = 0.7,\ q_D = 0.3$. Therefore, $\varepsilon = 0$. Note that the case $q_C = q_D = 0.5$ is only a special case of consistency of beliefs where each player shares the belief of equal probability of success in litigation.

Equilibrium thresholds: Let $\tilde{q}_C$ be the creditor's belief that makes him indifferent between action S and action NS. Let $\tilde{\varepsilon}$ be the player's degree of optimism that makes them indifferent between settling and delaying at $t = 0$. $\tilde{q}_C$ and $\tilde{\varepsilon}$ are thresholds that are explicitly determined in the equilibrium analysis.

The paper studies the case of optimism in driving delays in settlement. The paper does not study the case of pessimism since it would not be a threat to settlement.

Figure 4.1 –Timeline of events – Bargaining Game



Remark 1 (Outside options following $\Theta = 1$): In the event of a successful creditor litigation, the sovereign asset is at threat to either:

- Liquidation: The creditor receives the value from liquidating the asset while the debtor losses the value. Thus the creditor's (resp. debtor's) outside-option payoff is F (resp. $-F$)
- Restraint: The creditor receives no payoff from the restricted use of the asset but the debtor is inflicted the cost

4.5 Characterization of Equilibrium

The notion of equilibrium is subgame perfection (SPE). We characterize the condition for delay.

4.5.1 Proposition 2

Given $q_C \in (\tilde{q}_C, 1]$ *and* $\varepsilon > \tilde{\varepsilon} \in (0,1]$*, there exists a unique SPE at which players delay settlement at* $t = 0$*. At this SPE, the creditor's best response is* S*. Parties eventually settle at* $t = 1$*.*

For the proof below, we begin by working out the equilibrium expected continuation payoffs of players under different court outcomes and then solve for the participation constraints of players required for immediate agreement. Through this we will obtain the equilibrium bounds $\tilde{\varepsilon}$ and $\tilde{q}_C$ above which players delay agreement and creditor seeks an enforcement order.

Proof.

Consider a T-period game with $t = 0,1,2,3 \dots, T-1$. Let $E\pi_i^t(G)$ denote the equilibrium expected continuation payoffs of player i at time t given outcome G. Let $x_j^t(G)$ denote the equilibrium offer proposed by player i for player $j \neq i$ at time t given outcome G. Let x_C^0 denote the equilibrium offer proposed by the debtor for the creditor at time $t = 0$.

Applying backward induction, a recognised player i at last round $t = T-1$ given outcome $G = 0 \cup NS$ proposes $x_j^{T-1}(0 \cup NS) = 0$.[108] This holds in equilibrium because player j accepts the offer (as he has no outside option) and a unilateral deviation by the recognised player i to an alternative proposal greater than zero would be unprofitable.[109] Moving back to the beginning of $t = T-1$, the following are the player's equilibrium expected continuation payoffs conditional on outcome G:

$$E\pi_D^{T-1}(0 \cup NS) = \alpha\left(V - x_C^{T-1}(0 \cup NS)\right) + (1-\alpha)x_D^{T-1}(0 \cup NS) = \alpha V$$
$$E\pi_C^{T-1}(0 \cup NS) = \alpha\, x_C^{T-1}(0 \cup NS) + (1-\alpha)\left(V - x_D^{T-1}(0 \cup NS)\right) = (1-\alpha)V$$

Following outcome $G = 0 \cup NS$, all subgames from $t = 1$ are identical and so possess the same expected SPE payoffs. Therefore,

[108] 'Recognised' is the term used to indicate the chosen proposer of a particular round.
[109] An alternative offer greater than 0, though accepted by player j, would not maximise the payoff of player i.

$$For\ \forall\ t \geq 1, E\pi_D^t(0 \cup NS) = \alpha V\ and\ E\pi_C^t(0 \cup NS) = (1-\alpha)V$$

Following outcome $G = 1$, at $t = 1$ a recognised debtor proposes $x_C^1(1) = F$. The responding creditor accepts the offer and a unilateral deviation by the recognised debtor to an alternative proposal greater (resp. less) than F would be unprofitable (resp. rejected).[110] On the other hand, a recognised creditor proposes $x_D^1(1) = 0$. The responding debtor accepts the offer and a unilateral deviation by the recognised creditor to an alternative proposal greater than zero would be unprofitable.[111] Therefore,

$$E\pi_D^1(1) = \alpha\big(V - x_C^1(1)\big) + (1-\alpha)x_D^1(1) = \alpha(V-F)$$

$$E\pi_C^1(1) = \alpha\, x_C^1(1) + (1-\alpha)\big(V - x_D^1(1)\big) = \alpha F + (1-\alpha)V$$

Now in $\mathcal{G}$, creditor chooses S iff

$$-K_C + q_C\delta E\pi_C^1(1) + (1-q_C)\delta E\pi_C^1(0) > \delta E\pi_C^1(NS)$$

Since $E\pi_C^1(0) = E\pi_C^1(NS)$, the inequality solves to

$$q_C > \tilde{q}_C = \frac{K_C}{\delta\alpha F} \tag{4.1}$$

Thus the creditor chooses S iff $q_C > \tilde{q}_C$ and NS otherwise.

If $q_C \leq \tilde{q}_C$, both players know that at the beginning of the bargaining game that the creditor will choose NS. Thus in the bargaining round of $t = 0$, debtor will propose an indifferent offer $x_C^0 = \delta E\pi_C^1(NS)\ iff\ V - x_C^0 \geq \delta E\pi_D^1(NS)$. This simplifies to $V(1-\delta) > 0$ and thus players settle at $t = 0$.

If otherwise $q_C > \tilde{q}_C$, both players know that creditor will choose S. Thus in the bargaining round of $t = 0$, an indifferent offer is proposed subject to the satisfaction of the debtor's participation constraint i.e.

$$x_C^0 = E\pi_C^0 = -K_C + q_C\delta E\pi_C^1(1) + (1-q_C)\delta E\pi_C^1(0)\ \ iff$$

$$V - x_C^0 \geq E\pi_D^0 = -K_D + q_D\delta E\pi_D^1(0) + (1-q_D)\delta E\pi_D^1(1)$$

[110] An alternative offer greater than F, though accepted by the responding creditor, would not maximise the payoff of the recognised debtor. Also, an alternative offer less than F would be rejected by the responding creditor as he could liquidate the asset and receive F (for which debtor incurs $-F < V - F$) or inflict pain on debtor through a restricted use of the asset (for which debtor similarly incurs $-F < V - F$).

[111] An alternative offer greater than 0, though accepted by the responding debtor, would not maximise the payoff of the recognised creditor.

Simplifying, players delay agreement at $t = 0 \ \ iff$

$$V < \frac{(y-1)\delta\alpha F - (K_C + K_D)}{1-\delta} \tag{4.2}$$

This unique solution also applies for infinite games. *(See Proof of Proposition 2 in the appendix).*

Assuming condition (4.1) holds, substitute ε for $y - 1$ in condition (4.2) and rearrange, we get

$$\varepsilon > \tilde{\varepsilon} = \frac{V(1-\delta) + K_C + K_D}{\delta\alpha F} \tag{4.3}$$

Q.E.D.

Therefore, while for any $\varepsilon \leq \tilde{\varepsilon}$ players prefer to settle immediately, they strictly prefer to delay agreement for any $\varepsilon > \tilde{\varepsilon}$.[112] This distinguishes our result from the standard Rubinstein-Stahl solution where players always prefer to settle immediately due to the common knowledge they share of outcomes from negotiation breakdowns. The result also implies that heterogeneous beliefs are necessary but not sufficient for delay as players suspend negotiations only if the required threshold ($\tilde{\varepsilon}$) is met.

The general intuition here is that players are unable to settle immediately when the bargaining pie is not sufficient to compensate the parties' expectations from litigation. We can also infer from condition (4.3) that players are more likely to settle at $t = 0$ if the gains from settlement, the numerator of $\tilde{\varepsilon}$, are high.

4.5.2 Remark 2

Regardless of whether the enforcement order is an attachment or an injunction, the equilibrium analysis is the same.

The equilibrium analysis remains the same regardless of the type of enforcement order. This is because in either case the creditor is compensated no less than F in equilibrium at $t = 1$. Therefore, even though the two type of enforcement orders are associated with slightly different outside option payoffs, their games are both strategically equivalent.

[112] Without loss of generality, assume that if players are indifferent between delay and immediate settlement, they settle immediately.

4.5.3 Graphical representation of delay and settlement

Here we illustrate the argument behind Proposition 2 using a standard graphical exposition, showing the role of heterogeneous beliefs in driving delays under simplifying assumptions.

Take $\alpha = \frac{1}{2}$ and $K_C = K_D$ for illustrative purposes, so that players are only asymmetric with respect to their beliefs.

Figure 4.2 – Expected continuation payoffs at $t = 0$ and 'inefficient' delay

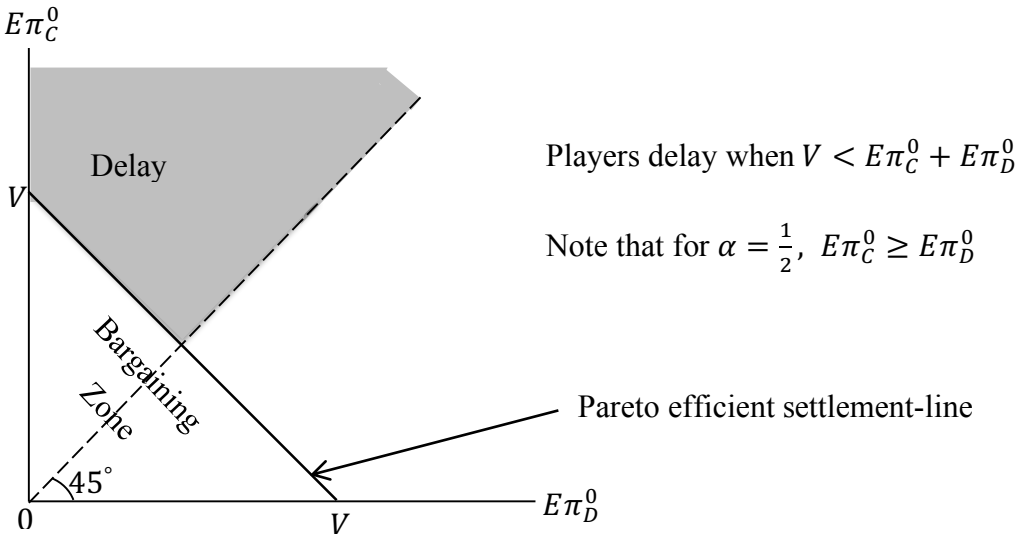


Figure 4.2 shows the players' expected continuation payoffs at $t = 0$ where the x-axis (resp. y-axis) represents that for debtor (resp. creditor). Players are able to reach an immediate settlement when the combination of their equilibrium expected continuation payoffs $E\pi_C^0$ and $E\pi_D^0$ rest within the bargaining zone (referred to as the area on and beneath the settlement line). Therefore, players are only able to settle immediately when their combined beliefs ε are sufficiently below the equilibrium threshold. However, when the creditor's belief of a successful litigation is sufficiently high and when the player's combined beliefs are sufficiently optimistic, then the combination of $E\pi_C^0$ and $E\pi_D^0$ will lie outside the bargaining zone and, in particular, will rest within the shaded region above the 45° line. Under such circumstances, they delay agreement at $t = 0$. Delay is inefficient as players lose the possible gains from settlement equivalent to $V(1 - \delta) + K_C + K_D$.

Figure 4.3 – Expected continuation payoffs at $t = 1$ and settlement

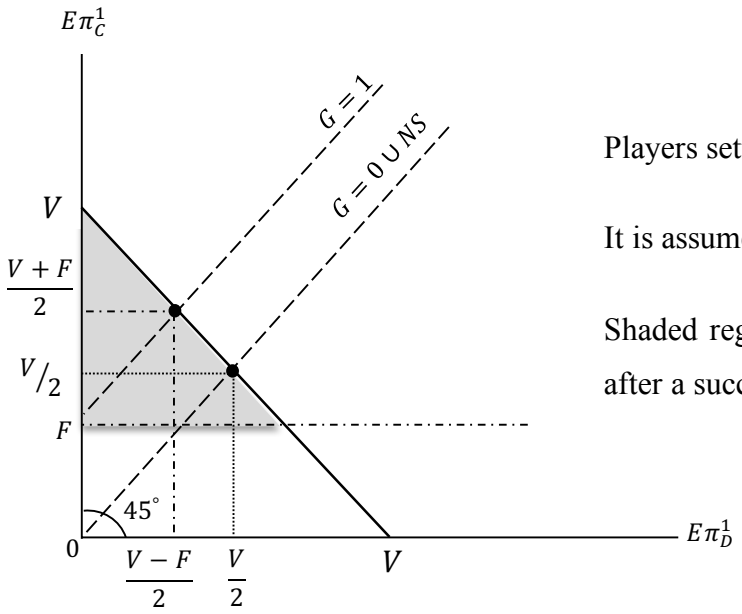


Figure 4.3 shows the players' expected continuation payoffs at $t = 1$, which depend on the outcome in $\mathcal{G}$. Players reach an agreement at $t = 1$ because the bargaining pie V can now accommodate their expected continuation payoffs. When the 45° line from the origin labelled "$G = 0 \cup NS$" intersects the Pareto efficient settlement-line, players split the pie half/half in expectation. The intuition is this: if the creditor is unsuccessful in litigation or failed to seek an enforcement action, the parties will distribute the pie evenly according to the assumption that they both share the same bargaining power $\alpha = \frac{1}{2}$. When the 45° line from F labelled "$G = 1$" intersects the Pareto efficient settlement-line, players split the reduced bargaining surplus $V - F$ evenly in expectation. The intuition is this: if the creditor is successful in litigation, the bargaining surplus reduces from V to $V - F$ as the debtor must at least match the creditor's outside option F and so the remaining $V - F$ is split evenly amongst the parties according to the assumption $\alpha = \frac{1}{2}$. Thus the creditor receives $\frac{V-F}{2} + F$ and the debtor receives $\frac{V-F}{2}$ in expectation. As expected, the higher F the higher the settlement payoff to the creditor and the lower it is to the debtor. Corollary 3 provides further intuitive results.

4.5.4 Corollary 2

With homogenous beliefs i.e. $\varepsilon = 0$, there is immediate agreement.

Consistent with the Rubenstein-Stahl framework, homogenous beliefs yield immediate settlement results. Though such beliefs are sufficient for immediate agreement, they are not

necessary since players with heterogeneous beliefs can immediately settle if threshold for delay is not met. This means that parties will not delay settlement either because they hold consistent beliefs or they hold insufficient inconsistent beliefs.

4.5.5 Corollary 3

$\tilde{\varepsilon}$ is strictly increasing in K_i for $i \in (C, D)$ and V but strictly decreasing in, $F, \delta \; and \; \alpha$. (See Table 4.5 in the appendix). Similarly, $\tilde{q}_C$ is strictly increasing in K_C and strictly decreasing in, $F, \delta \; and \; \alpha$.

Corollary 3 suggests that delays are associated with relatively low legal costs, low gains from re-accessing the capital market, high asset value, high discount factors and high recognition probability for the debtor. This is intuitive as optimistic players are more willing to risk disagreement in the following circumstances: (1) paying a small legal fee, (2) being faced with scarce resources for compensating creditor's claims, (3) anticipating a high sovereign-asset value enjoined by the court order, (4) acquiring low discount rates, (5) when the creditor has relatively low future bargaining power. One of the main implications of this result is that litigation needs to be made costly to sustain market bargaining and thus to prevent inefficient delay.

4.5.6 Comparative statics and Minor extensions

4.5.6.1 Alternative discrete time interval version

Here we want to consider the effect on the equilibrium analysis when we converge to continuous time settings. As stated above, the bargaining game between parties could be one in which there are less frictions, enabling parties to respond sooner rather than later.

In the basic model, we assumed that the time interval between consecutive periods is one. Now, let us allow offers to be made at discrete points in time, namely, $t = 0,\ \Delta, 2\Delta, 3\Delta,\ \dots,\ \tau\Delta, \dots, T - 1\Delta$, where $\Delta > 0$. The discount factor $\delta = \frac{1}{1+r\Delta}$ where r denotes the interest rate on sovereign debt, which we assume to be constant. Using condition (4.3), in the limit, as $\Delta \to 0$, $\delta \to 1$. $\lim_{\delta \to 1} \tilde{\varepsilon} = \frac{K_C + K_D}{\alpha F}$. Therefore, the less the time interval between two consecutive offers, it becomes increasing more likely to observe delay.

In the main text and in this extension, we make the implicit assumption that the duration of litigation phase is the same as the time difference between successive bargaining rounds. This is a strong assumption and thus we are led to consider the following extension below.

4.5.6.2 Different time intervals between consecutive offers

Here we look the more realistic case i.e. the effect on the equilibrium analysis of a longer duration of the litigation phase. In the basic model, we assumed identical time intervals between consecutive offers for the whole bargaining game. But it is not unusual for the time interval of the litigation-related disagreement phase to be longer than that of other disagreement phases. We show that the longer the period of litigation, the less the likelihood of delay at $t = 0$.

Model: We allow offers be made at discrete points in time, namely $t = 0, \Delta_1, 2\Delta_2, 3\Delta_3, \dots, \tau\Delta_\tau, \dots, T - 1\Delta_{T-1}$ where $t = \tau\Delta_\tau$ indicates τ^{th} bargaining round resulting from a time interval Δ_τ of delay from $\tau - 1^{th}$ bargaining round to the τ^{th} bargaining round. In the basic model, we set $\Delta_\tau = 1 \; for \; \forall \, \tau$. Now, let $\Delta_2 = \Delta_3 = \cdots = \Delta_{T-1} = \Delta = 1$ but $1 < \Delta_1 < 2$. We now show that in this revised model, there will be a reduced likelihood of delay at $t = 0$.

Proof.

From times $t = \Delta_1$ to $t = T - 1$, the same discount factor (given by $\delta = \frac{1}{1+r\Delta} = \frac{1}{1+r}$). All subgames from $t = \Delta_1$ following outcome $G = 0 \cup NS$ (prior to the realization of the identity of the proposer) are identical. We now use the same technique performed in the Proof of Proposition 2.

Applying backward induction, at the beginning of subgame Δ_1 a recognised debtor given outcome $G = 0 \cup NS$ proposes $x_C^{\Delta_1}(0 \cup NS) = \frac{1}{1+r\Delta_2}(1-\alpha)V = \delta(1-\alpha)V$ and a recognised creditor given outcome $G = 0 \cup NS$ proposes $x_D^{\Delta_1}(0 \cup NS) = \delta\alpha V$. Therefore, equilibrium expected payoffs conditional on outcome $G = 0 \cup NS$ is:

$$E\pi_D^{\Delta_1}(0 \cup NS) = \alpha(V - \delta(1-\alpha)V\,) + (1-\alpha)\delta\alpha V = \alpha V$$
$$E\pi_C^{\Delta_1}(0 \cup NS) = \alpha\,\delta(1-\alpha)V + (1-\alpha)(V - \delta\alpha V) = (1-\alpha)V$$

Following from the Proof of Proposition 2, the equilibrium expected payoffs conditional on outcome $G = 1$ is,

$$E\pi_D^{\Delta_1}(1) = \alpha(V - F)$$
$$E\pi_C^{\Delta_1}(1) = \alpha F + (1-\alpha)V$$

Let $\delta_{\Delta_1} \equiv \frac{1}{1+r\Delta_1}$. Now in $\mathcal{G}$, creditor chooses A if

$$-K_C + q_C\delta_{\Delta_1}E\pi_C^{\Delta_1}(1) + (1-q_C)\delta_{\Delta_1}E\pi_C^{\Delta_1}(0) > \delta_{\Delta_1}E\pi_C^{1}(NS)$$

The inequality solves to

$$q_C > \tilde{q}_C = \frac{K_C}{\delta_{\Delta_1}\alpha F} \tag{4.4}$$

Therefore players delay settlement at $t = 0$ if

$$\varepsilon > \tilde{\varepsilon} = \frac{V(1-\delta) + K_C + K_D}{\delta_{\Delta_1}\alpha F} \tag{4.5}$$

Since $\frac{d\tilde{\varepsilon}}{d\delta_{\Delta_1}} < 0$, then $\frac{d\tilde{\varepsilon}}{d\Delta_1} > 0$. Therefore the longer the period of litigation, the more impatient players are and thus the higher the likelihood of settlement at $t = 0$.

Q.E.D.

4.6 Calibration

Here, we present results from the calibrated version of the model, using NML vs Argentina as a reference case study. We compute for the minimum degree of heterogeneity in beliefs required for delay in agreement.

We estimate or use reported values on the parameters $O, V, F, \delta, \alpha, K_C, K_D$ in the Argentine 2001 default, litigation and 2016 settlement. All values are reported in 2016 terms. C represents the group of holdout creditors who failed to participate in the 2005 and 2010 debt restructuring, while D represents the Republic of Argentina. We assume that where at least one single holdout-creditor seeks a court-enforcement order, he acts on behalf of all other holdout-creditors that did not seek an enforcement order.[113]

Choice value for O, the total outstanding debt claims by C

In order to establish whether the sovereign defaults in the first place, we estimate the value of the outstanding debt payments at 2001 (i.e. full principal plus future streams of interest payments till maturity) to the holdout creditors.

[113] All other holdout-creditors include those who only obtained money judgements, as well as those you did not litigate at all.

We obtain information on a selected category of bonds with the highest litigation rates and holdout rates of over twenty percent across the whole sample of bonds associated with holdouts. These seven bonds are identified in (Cruces and Samples, 2016, p. 17)[114] and we estimate the value of the accrued debt payments on these bonds from the 2001 default, through calculating the present value of the bonds as at 2001 and then re-calculating for the future values of these bonds at 2016. We then take the weighted-average of both the coupon rate and remaining maturity across the seven bonds. We then use these averages to estimate, in the same fashion, the value of the accrued debt payments of the other 119 bonds associated with holdouts.[115] Through this method, we can roughly estimate the total outstanding debt payments to the holdout bonds.

Table 4.6 in the appendix shows the details of the seven bonds and reports the computed weighted-average coupon rate and remaining maturity used as a proxy for the coupon rate and maturity of the remaining 119 bonds. Using a discount rate of 7.5% justified below (see sub-section on 'choice value for δ, discount factor'), we estimate the value of outstanding debt payments discounted to 2016 (using present value or future value calculations where applicable). We find that the total outstanding debt payments amount to \$25.1 billion in 2016 terms. Therefore, $O = \$25.1bn$. This leaves an average annual cost of servicing the debt across a 15 year default period (2001-2016) to be approx. \$1.67billion.

Choice value for V, the gains from re-accessing (or maintaining access to) the international capital markets

Here we refer 'gains' as funds raised from world capital markets. In April 19 2016, Argentina raised \$16.5billion in its first return to the international capital markets since its 2001 debt default. These particular funds were raised through bond issuances governed by New York

[114] From Cruces and Samples (2016), details of the seven bonds with the highest litigation rates and holdout rates over twenty percent, including their currency, coupon rate, ISIN codes, maturity dates and total principal (in millions) outstanding (in those series) post-2010 are (the number preceding each bond is the order in which each bond appears in Republic of Argentina 2004, Annex C): #41: Global bond, ARP ten percent 2001-2004 and twelve percent 2004-2008 due 2008, XS0130278467, Jun-2001, \$595; #9: Global bond, USD 11.375% due 2017, US040114AR16, Jan-1997, \$419; #17: Bond, USD variable rate due 2005 (FRAN), US040114AX83, Apr-1998, \$298; #14: Global bond, USD 10.25% due 2030, US040114GB00, Jul-2000, \$122; #7: Global bond, USD 12.375% due 2012, US040114GD65, Feb-2001, \$113; #11: Global bond, USD twelve percent due 2020, US040114FB19, Feb-2000, \$66; #48: Brady Par bond, EUR 5.87% due 2023, DE0004103007, Mar-1993, \$58.

[115] Cited in Cruces and Samples (2016), a total of 126 bond series were associated with holdouts after the 2010 exchange, of which seven of them had holdout rates of over twenty percent. The rest of the bonds with twenty-percent-or-less holdout rates were 119 bonds.

law.[116] A significant proportion of the funds were to settle the holdout creditors shortly after. For the purposes of calibration, we therefore set $V = \$16.5bn$, assuming also that Argentina would have been able to raise no less than this amount across the 15 year period (2001-2016) had the sovereign not defaulted in the first place. This averages to $1.1billion per year.

Choice value for F, the value of the sovereign asset bound by enforcement order

In April 22 2016, Argentina reported it had settled with majority of its holdout creditors, paying $9.4billion from its $16.5bn bond offering mentioned above.[117]As previously stated, the enforcement order used against Argentina was associated with preventing the sovereign from making scheduled payments on exchange bonds (and thereby blocking access to the international capital markets) without settling the holdout creditors. The eventual settlement in April 2016 implies that Argentina valued the sovereign asset – which in this case was the continued service of payments to exchange bondholders – at a cost of $9.4bn in payments to holdouts. As a result, we set $F = \$9.4bn$ as this final settlement to majority of its holdouts meant that the sovereign could not only continue servicing the exchange bonds but could also re-gain access to the international capital markets.

Choice value for δ, the discount factor

Argentina's ten-year bonds, which accounted for a significant 40% of the total $16.5bn bond issuance, traded at 7.5%.[118] At the same time, it was reported that comparable emerging market bonds (10-year with single-B credit ratings) were trading at approx. 7.47%.[119] Therefore, we set the discount rate $r = 7.5\%$ and thus the discount factor $\delta = \frac{1}{1+r} = 0.93$.

Choice value for α, the bargaining power (i.e. recognition probability) of D

[116] See (Moore et al., 2016)
[117] See (Kraul and D'Alessandro, 2016)
[118] Local press revealed an initial breakdown of US$2.75bn three-year bonds at a 6.25% yield, US$4.5bn five-year bonds at a 6.875% yield, US$6.5bn ten-year bonds at 7.5%, and US$2.75bn 30-year bonds priced at 8.0%. See *supra* note 116
[119] Other emerging-market 10-year bonds with single-B credit ratings are trading at about 7.47%. See (Wernau and Cui, 2016)

Argentina's 2005 and 2010 bond exchanges involved a unilateral offer made by the sovereign to its creditors.[120] Therefore we set $\alpha = 1$, though the 2016 negotiations involved a slightly different dynamic to the bargaining process.[121]

Choice value for K_C and K_D, the legal cost incurred by C and D respectively

It was reported in (Guzman and Stiglitz, 2015b, p. 12) that vulture funds were compensated with $325miilion for legal fees incurred during trial.[122] Therefore, we set $K_C = \$325m$. This value could be presumably higher since not all litigant creditors that similarly sought for an injunctive order were vulture funds. Due to the lack of availability of data on Argentina's legal costs K_D, we set $K_D = K_C = K$ for the calibration and examine changing levels of K_D.

Table 4.4 – Parameter values for Calibration

Name	Meaning	Values	Normalized values*
O	Total outstanding debt claims by C	$\$25.1bn$	1.52
V	Gains made from re-accessing (or maintaining access to) the international capital markets	$\$16.5bn$	1
F	Value of the sovereign asset bound to a court-enforcement order	$\$9.4bn$	0.57
δ	Discount factor	0.93	0.93
α	Bargaining power of D	1	1
K_i	Legal cost incurred by player i	$\$325m$	0.02

*Values in US dollars in the third column are normalized by dividing them by V

Table 4.4 lists the parameters and their assigned values for the purpose of estimating the degree of heterogeneity required for delay in the Argentina case study. Relating the case to Figure 4.1 timeline, we assume the following: (1) $t = 1$ represent the years from 2001 to 2010; (2) time difference between $t = 1$ and $t = 2$ represent the years from 2011 to 2015; (3) $t = 2$ represent the years from 2016 to 2025. Thus we assume periods of negotiations take 9 years while periods of disagreement take 4 years.

[120] In 2005, after prolonged, contentious, and unsuccessful attempts to restructure the debt, Argentina abandoned the negotiation process and made a unilateral offer. In 2010, the government decided to open another bond exchange, on generally similar terms as before, to deal with remaining holdouts. See (Hornbeck, 2013, p. 2)

[121] The 2016 settlement involved back-and-forth negotiations between the sovereign and holdout creditors for which they eventually reached a final settlement as stated above. Dan Pollack was a court-appointed mediator for a deal between Argentina and its debt holder. See (Stevenson, 2016). In this sense, it could be argued that in 2016 $\alpha = 0.5$. We therefore fix α to an initial value equal to 1 and then observe how our delay conditions change with respect to decreasing values of α.

[122] The court order that resulted from the suit by leading plaintiffs (majority of which were vulture funds) extended to all other holdouts involved (including others who litigated i.e. me-too litigants and those who did not). See (Guzman, 2016, p. 12)

Results

Substituting the normalized values into equation (4.3) above, we find that players delay with sufficiently heterogeneous beliefs above $\tilde{\varepsilon} = 0.21$. This means that, assuming all values reported are known at the start of bargaining game, there is a high tendency to observe delay in agreement driven by players optimism in litigation.

We can make a straight forward comparison between the Rubinstein-Stahl solution and our heterogeneous beliefs model using the calibrated values in Table 4.4.

Rubinstein-Stahl Model solution

In applying the Rubinstein model, players have homogenous beliefs and thus, the creditors belief of a successful litigation equates the debtor's belief of a successful litigation i.e. $\varepsilon = 0$ as $q_c = 1 - q_D$. Substituting our values for equation (4.1), we obtain $\tilde{q}_c = 0.038$. When $q_c \leq 0.038$, creditor receives $x_C^0 = 0$ and debtor receives $V - x_C^0 = 1$. Thus, there is no efficiency loss as $x_C^0 + V - x_C^0 = 1$. When $q_c > 0.038$, creditor receives $x_C^0 = 0.5301q_c - 0.02$, and debtor receives $V - x_C^0 = 1.02 - 0.5301q_c$. Here also there is no efficiency loss. Thus, under the Rubinstein solution we cannot observe efficiency losses.

Heterogeneous-beliefs Model solution

Under our heterogeneous beliefs model, $q_c \neq 1 - q_D$. When $\varepsilon \leq 0.21$, we obtain the Rubinstein solution above. However, when $\varepsilon > 0.21$, delay occurs at $t = 0$. As $q_c > 0.038$, creditor chooses S in $\mathcal{G}$. If $G = 0$, then at $t = 1$, creditor receives $x_C^1 = 0$ and debtor receives $V - x_C^1 = 1$. If we discount these payoffs to $t = 0$ and subtract the legal costs players incur in litigation, creditor receives a discounted payoff $\delta x_C^1 - K_C = -0.02$, and debtor receives $\delta(V - x_C^1) - K_D = 0.91$. Therefore, there are efficiency losses since $\delta x_C^1 - K_C + \delta(V - x_C^1) - K_D = 0.89 < V$.

Similarly, if $G = 1$, then at $t = 1$, creditor receives $x_C^1 = 0.43$ and debtor receives $V - x_C^1 = 0.57$. Discounted payoffs less legal costs mean that creditor receives 0.38 and debtor receives 0.51. Therefore, there are also efficiency losses of the same magnitude as above. Overall welfare loss equals $V(1 - \delta) + K_C + K_D = 0.11$.

Now, using the normalised values in Table 4.4, we investigate the responsiveness of the minimum degree of optimism required for delay (i.e. $\tilde{\boldsymbol{\varepsilon}}$) to changes in parameter values ceteris paribus.

Figure 4.4 shows the changes in $\tilde{\varepsilon}$ to changes in V, K_i for $\forall i \in (D, C)$ and $K(= K_D = K_C)$. K_i refers to any one player's legal cost, while K refers to the specific case where both players legal cost are the same. As Corollary 3 suggests, we find $\tilde{\varepsilon}$ is positively correlated with these variables. Therefore, players are more likely to disagree – associated with lower levels of $\tilde{\varepsilon}$ – when bargaining pie and legal costs are lower.

Figure 4.4 – Response of $\tilde{\varepsilon}$ to changes in V, K_i and K

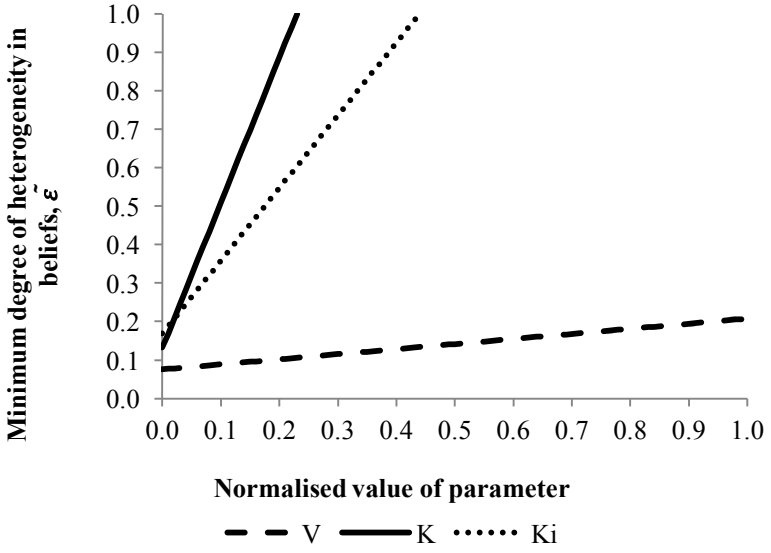
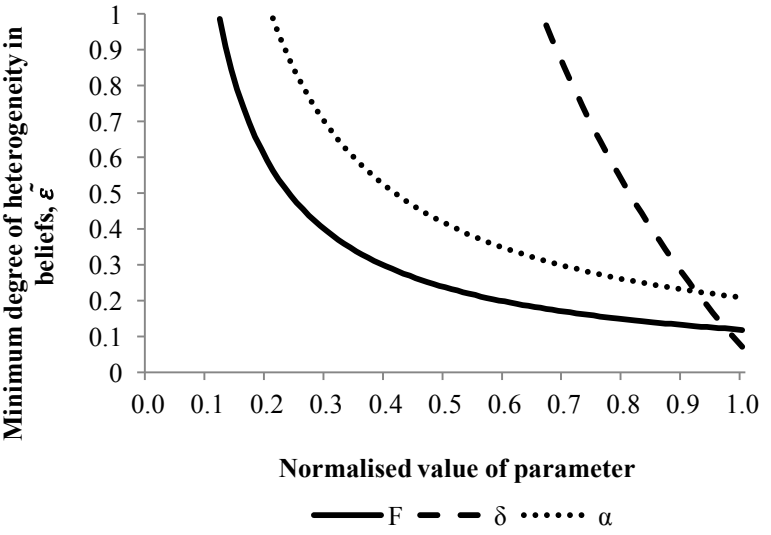


Figure 4.5 shows the changes in $\tilde{\varepsilon}$ to changes in F, δ and α. Again as Corollary 3 suggests, we find $\tilde{\varepsilon}$ is negatively correlated with these variables. Therefore, players are more likely to disagree when the value of the sovereign asset, the discount factor and the recognition probability are higher.

Figure 4.5 – Response of $\tilde{\varepsilon}$ to changes in F, δ and α



4.7 Policy discussion

A crucial question in policy debates concerning the implementation of an international sovereign insolvency procedure is this: Are restructuring delays associated with the presence of incomplete information regarding the enforceability of contracts?[123] Our results establish that heterogeneous beliefs about court enforcement can cause inefficient delays in bargaining. This raises the question of whether there is a role for a formal process – in the likes of a sovereign bankruptcy procedure – or an informal framework – analogous to a third party intervention – that may coordinate parties' expectations of a debt workout or legal dispute pre/post- default. In this section, we evaluate existing policy proposals aimed at limiting the role that adversarial courts plays in resolving disputes.

Statutory frameworks

A number of proposals have called for the creation of formal, statutory mechanisms for restructuring sovereign debt – more akin to international bankruptcy procedures for countries in debt distress. Such frameworks could help address the inefficient delays that arise from players pursing full-blown litigation because of their heterogeneous expectations of outcomes from adversarial litigation. The ***Sovereign Debt Restructuring Mechanism (SDRM)*** proposed by Krueger (2001) was based on an international insolvency procedure binding on all IMF member countries – requiring the amendment of IMF Articles of Agreement and thereby revisions of national laws. It sought to address, among other things, the problem of holdouts i.e. creditors who reject a restructuring deal and subsequently take legal action to assert their contractual rights. It was designed to approve payment standstills, facilitate restructuring and write down unsustainable sovereign debt (Fischer, 2003). Such an international legal framework was supposed to work as a deterrent to disruptive litigation. For example only litigating creditors, who received satisfaction of court judgements *prior* to the sovereign reaching a restructuring agreement with the majority of its creditors, would not be subject to the SDRM. As a result, it was understood that this uncertainty – in regards to the timing of a majority settlement outcome against the timing of the satisfaction of individual court judgements – would pose a deterrent to litigation given the legal expenses incurred therein (Hagan, 2008). Therefore, the existence of the SDRM would limit the role

[123] This question is reinforced in matters pertaining to particular jurisdictions. For example, the United States Court of Appeals, Second Circuit recognized the competing interest faced by the U.S. government to (1) ensure the successful, voluntary resolution of past-due foreign sovereign debt and (2) maintain the enforceability of contracts under the law. See *Pravin Banker Associates, Ltd. v. Banco Popular del Peru*, 109 F.3d 852 (2nd Cir. 1997). It may not be surprising therefore to observe competing parties in a sovereign debt lawsuit placing more weight on one policy interest over another.

adversarial-type legal systems play in resolving sovereign debt disputes and thus heterogeneous beliefs may no longer act as a driver of inefficient delays in restructuring. Similarly emphasized by (Eichengreen, 2003), a statutory regime would consist of certain features that impose significant restraints on litigation, albeit with the approval of a supermajority of creditors (Brooks and Lombardi, 2015, p. 10).

Some other more recent statutory proposals include the following: An International Debt Restructuring Court, International Sovereign Debt Tribunal, Fair and Transparent Arbitration Process, and Immunization. The ***International Debt Restructuring Court (IDRC)***, proposed by a group of UN experts (United Nations, 2009), is based on an internationally recognised set of rules that determines the required debt reduction, priority of claims and fair burden sharing amongst creditors. Its rulings will receive worldwide recognition in national courts of participating countries (Swiss Federal Council, 2013, p. 21). The ***International Sovereign Debt Tribunal (SDT)***, proposed by (Paulus, 2010), is designed to adjudicate disputes arising from the restructuring process. Argued by the authors, an arbitration panel under the SDT consisting of a "selected pool of expert arbitrators" experienced in handling sovereign debt disputes and jointly chosen by creditor(s) and the debtor, could restore trust, confidence and legitimacy in debt workouts (Brooks and Lombardi, 2015, p. 11)[124]. Parties' decision to resort to an independent international arbitration process would be based on a contractual agreement stipulated in the debt instrument at the time of issuance. Other calls have been made for such a process in resolving sovereign debt disputes ((Latindadd, 2014); (Jubilee USA Network, 2012); (Eurodad, 2009)). The ***Fair and Transparent Arbitration Process (FTAP)***, suggested by (Raffer, 2005), proposes for an international insolvency procedure where an ad hoc court of arbitration determines the level of debt sustainability from a restructuring offer supported by a simple majority. Here, all stakeholders affected by the debt are entitled to public hearing, suppressing the adverse effect of an adversarial litigation where only the pleadings of the creditor(s) and sovereign debtor are heard. However, questions still remain regarding the capacity of the arbitration court in assessing the sustainability of debt (Swiss Federal Council, 2013, p. 22). ***Immunization*** is a limited statutory reform, proposed by Buchheit et al. (2013),

[124] Moreover, in direct condemnation of the US court ruling in favour of Argentina's holdouts, (Guzman, 2016, p. 15) states that "domestic judges of major lending jurisdictions such as New York, who do not understand the nature of sovereign debt restructuring processes, are still the ones in charge of deciding what the ultimate goals of a restructuring should be, and what remedies should be implemented to achieve those goals" absent any major improvements in the contractual approach for resolving the deficiencies observed in sovereign debt restructuring. Thus, an arbitration panel consisting of experts will be highly rewarding in restoring mutual confidence in the dealings of sovereign debt dispute and thus may reduce self-serving bias of arbitration outcomes.

motivated by the 2012 US court ruling in favour of Argentina's holdout creditors who sought to interfere with payments to third-party creditors. The reform suggests introducing laws in major financial centres to immunize payments and clearing systems from interference by holdout creditors and thus, such a reform aims to reduce the uncertainty regarding the possible seizure of attachable assets and upset of revenue streams.

Incorporated with a process for resolving disputes, such aforementioned regimes may provide a more efficient alternative to adversarial litigation. However, questions still remain – for example, who will act as an impartial arbiter of sovereign debt disputes, what are the due processes and how will such a framework be binding on creditors and debtors. There is a general consensus that institutions such as IMF have been questioned on the basis of its legitimacy and credibility (Brooks and Lombardi, 2015, p. 11).

Contractual frameworks

The main set of tools currently used for restructuring sovereign debt is considered a contractual approach. ***Collective Action Clauses*** (CAC's) are designed to facilitate creditor coordination in the event of default and prevent holdouts. In addition to the 'majority restructuring clauses' that bind holdouts to amended payment-terms agreed by a supermajority of bondholders, CAC's also include 'majority enforcement clauses' that prevent individual bondholders from taking the sovereign to court ((Das et al., 2012); (Weidemaier and Gulati, 2014a)). Strengthening such clauses provides strong advantages: Where voting thresholds are met, adversarial courts play no role in settling disputes as majority agreements become binding on holdouts. An obvious criticism of CAC's, however, is that they fall short in aggregating all creditors' claims and binding them, along with the sovereign, to a single restructuring agreement in cases where supermajority thresholds are not met (Brooks and Lombardi, 2015, p. 16). Thereby, the settlement of disputes remains at the discretion of the courts when voting thresholds are not reached. Where players are excessively optimistic about court decisions, we may experience delays. This concern is aggravated where the creditor-base is largely homogenous with holdout-type creditors. In such situations, CAC's would be ineffective in preventing recourse to the current adversarial litigation.

Other frameworks/proposals/interventions

There are other formal (or informal) debt restructuring frameworks aimed at limiting the role of courts. They tend to coordinate parties in ways that reduces incentives to pursue litigation or intensify litigation efforts. For example, the ***IMF lending into arrears (LIA) policy*** in

International Monetary Fund (2002) seeks to support adjustment programs while facilitating orderly debt restructuring to restore market access. Under the policy, the Fund may lend to a debtor in arrears to external private creditors if, among other things, the debtor is pursuing appropriate policies and is making good faith efforts to reach a collaborative agreement with its creditors.[125] Thus through good debtor-conduct, creditors may have decreased incentives to pursue or persist in litigation. However, International Monetary Fund (2013) reports that the application of the LIA policy appears to lack clarity on the assessment of the good faith criterion. Even more importantly, debtor must seek fund support before the LIA policy may apply. Therefore, despite the expectation that mutual good-faith efforts limit the role of courts, the LIA policy is without its shortcomings. Furthermore, the *Institute of International Finance* ***(IIF) Principles for Stable Capital Glows and Fair Debt Restructuring*** in Institute of International Finance (2013) constitute a voluntary code of conduct between all sovereign debt issuers and their private sector creditors to help preserve the access of sovereign debtors to external financing during periods of financing distress.[126] Where debt restructuring is deemed inevitable, the Principles seek the cooperation between debtors and creditors in an orderly fashion involving continuous engagement towards a fair resolution of debt difficulties limiting litigation risk.

One of the key concerns with current practice highlighted in UNCTAD (2015a), hereafter ***'UNCTAD proposal'***, is the multiplicity of tribunals and adjudication bodies dealing with debt problems and as a result creating legal incoherence due to possible variations in legal interpretations.[127] Thus, the absence of a global coherence framework in dealing with sovereign debt disputes may facilitate the scope for forming different expectations of litigation processes and consequently lead to inefficiencies in negotiations. Two principles suggested in the UNCTAD proposal that may reduce heterogeneity in expectations are (1) Transparency and (2) Good faith. *Transparency* in sovereign debt workouts could coordinate expectations of debt restructuring processes in general and in turn potentially limit the role of courts. The provision of information on the sovereign's debt workout institutions, processes and underlying data in relation to debt sustainability, projections and creditor holdings, as stated in the UNCTAD proposal, sends a strong signal of transparency to the

[125] More details discussed in Chapter 5
[126] More details discussed in Chapter 5
[127] The UNCTAD proposal argues that the lack of clear, universally applicable rules and principles undermines the predictability of debt enforcement, spiralling uncertainty and threatening to complicate crisis resolutions. They mention that this is particularly reinforced by conflicting judicial and administrative orders granted by courts of the United States, United Kingdom and European Union in relation to holdout litigation.

stakeholders involved.[128] *Good faith* in sovereign debt workouts could reduce delays in agreement through not only restricting the role of courts but also coordinating expectations of litigation outcomes. As mentioned in the UNCTAD proposal, good faith has gained importance for the interpretation of contractual obligations in common law jurisdictions.[129] Unilateral or mutual conduct of good faith could then be recognised by courts and in turn collectively shape parties' prospects of court outcomes. Challenges in the global adoption of these among other principles remain as the UNCTAD proposal failed to gain unanimous consent across all member states.[130] Reasons for the lack of consensus among members included the uncertainty underlying the legal interpretations of some principles (UNCTAD, 2015b). The lack of an internationally recognised agenda, whether formal or informal, poses serious risks in achieving timely sovereign debt workouts.

Additionally, the ***International Capital Market Association*** (ICMA) has recently played a role in reducing ambiguity in contractual language. It proposed model clauses intended to facilitate future sovereign debt restructurings through providing greater clarity on the interpretations of certain terms in bond contracts governed by English law and New York Law.[131] However, the ICMA-type intervention is without its limitation. Although progress has been made in incorporating the enhanced clauses in international sovereign bond issuances,[132] there remains a significant outstanding stock of debt – approximately 82 percent

[128] Though it remains an open question as to whether transparency is an established principle of law, one may argue it is an emerging one (see UNCTAD (2015a)). Therefore, it could be expected that heterogeneous beliefs of court decisions on motions relating to transparency could be reduced if such principle is incorporated into contracts.

[129] For example, in the Uniform Commercial code (U.C.C.) of the U.S., there is an implied covenant of good faith and fair dealing. The U.C.C. defines "good faith" as "honesty in fact and the observance of reasonable commercial standards of fair dealing." U.C.C. § 1- 201(b)(20) (amended 2003). However, these explanations do not provide a definite meaning of good faith and fair dealing. See (Madsen and Litteken, 2014).

[130] A draft resolution on "Basic Principles on Sovereign Debt Restructuring Processes" was adopted by the General Assembly of the United Nations in New York at its Sixty-Ninth Session on 10 September 2015, with 136 member states voting for, 6 against and 41 abstentions. The six countries that voted against their adoption were United States, United Kingdom, Canada, Germany, Israel and Japan. This group includes the major lending jurisdictions and leading creditor countries. See (UNCTAD, 2015b).

[131] In May 2015, the ICMA published a new updated Collective Action Clauses (CACs) and aggregated CACs in response to the New York court's decision in the NML Ltd v Argentina sovereign debt dispute. The ICMA also developed an alternative language for the Pari passu clause eliminating the ratable payment interpretation (International Capital Market Association, 2014). As a reminder, CACs is a contract clause that allows for a supermajority of bondholders that agree to a debt restructuring to bind all other holders, including those who voted against the restructuring. Pari passu clause is a contract clause referring to equal rights of payment, or equal seniority on bonds.

[132] International Monetary Fund (2016) reports that approximately 154 issuances governed by English and New York law – representing 74 percent of the nominal principal amount of total issuances from October 1, 2014 to October 31, 2016 – have included the enhanced clauses. The ICMA initially issued a press release on the revised collective action clauses and a new standard pari passu clause on August 29, 2014. See (International Capital Market Association, 2014).

of US$ 1.032 trillion in total nominal principal amount as at October 31, 2016 – without the new provisions (International Monetary Fund, 2016). Thus, there remains a strong call for further work into the redesigning of contracts to facilitate common understandings among market participants and accordingly reduce the role of courts.

Finally, an important point to note on the recent evolution in the legal environment is the U.S. Supreme Court decision authorizing discovery of worldwide assets held by a foreign-sovereign judgment debtor.[133] After discovery, a district court could then determine the assets immune from attachment or not.[134] Such ruling accommodates for further heterogeneous expectations of court decisions regarding the immunity of an asset and thus poses to lengthen delays in sovereign debt restructuring processes.[135] The findings of this paper suggest likewise, that the launching of a discovery process after sovereign debt restructuring negotiations threatens to delay settlements. It leaves a possible adverse ex-ante effect on the implementation of debt restructuring as it discourages creditors from participating in a debt relief peradventure they find suitable assets for attachment. As a result, the sovereign may be placed in a more vulnerable position and recovery from a debt crisis even more difficult. These implications are a by-product of the court's affirmed order in the Argentine litigation that sets a precedent for future sovereign debt litigations.

4.8 Conclusion

Evidence suggests that creditors and sovereign debtors hold significant heterogeneous beliefs about outcomes from sovereign debt disputes filed under an adversarial legal system. This paper has shown that this may be driving inefficient delays in restructuring negotiations, and as such produce quantifiable non-negligible welfare losses illustrated in the calibration exercise. An important policy implication is that non-adversarial legal systems will lead to more efficient restructuring negotiations. However, there remains an open question about the effectiveness of such alternative legal frameworks in addressing inefficiencies caused by heterogeneous beliefs. Thus, there are three main areas we plan to explore for future research.

[133] See *NML Capital, Ltd. v. Republic of Argentina*, No. 12-842, 573 U.S. (2014)

[134] District court confirmed it would serve as a "clearinghouse for information" regarding a sovereign's worldwide assets. See NML v. Argentina *supra* note 133 (slip op., at 3))

[135] The supreme court acknowledged heterogeneous opinions of parties by stating that Argentina may regard certain property immune from execution but "NML may think the same property not immune". See NML v. Argentina *supra* note 133 (slip op., at 10)) (emphasis in original). However, The district court expects initial negotiations over specific production requests of assets to include "some reasonable definition of the information being sought." Through these type of negotiations, the district court seeks to limit discovery to that which is "reasonably calculated to lead to attachable property". See NML v. Argentina *supra* note 133 (slip op., at 3)). Therefore, this statement alone suggests that such negotiations aim to synchronise divergent expectations of court decision on attachment. Notwithstanding, the statement leaves the courts with an enormous amount of discretion.

Firstly, we aim to investigate the extent to which these alternatives can provide a better approach to adversarial litigation. Secondly, we aim to assess the ex-ante implications of these alternatives in reducing heterogeneous beliefs – for example, studying their impact on debtors' borrowing incentives and creditors' lending behaviour. Thirdly, we plan to examine how the model can be modified when applying other national legal systems.

4.9 Appendix

4.9.1 Proof of Proposition 2

Since the uniqueness of the SPE expected payoffs following $G = 1$ has already been shown within the proof of Proposition 2, we only establish here the uniqueness in SPE continuation payoffs for infinite games following $G = 0 \cup NS$.

Let the set of SPE payoffs for any $t \geq 1$ of the creditor conditional on $G = 0 \cup NS$ be given by:

$$E\Pi_C^t(0 \cup NS) \equiv$$

$$\left\{E\pi_C^t(0 \cup NS): \exists\ an\ SPE\ of\ any\ subgame\ \ with\ payoffs\left(E\pi_C^t(0 \cup NS), E\pi_D^t(0 \cup NS)\right)\right\}$$

Let the set of SPE payoffs for any $t \geq 1$ of the debtor conditional on $G = 0 \cup NS$ be given by:

$$E\Pi_D^t(0 \cup NS) \equiv$$

$$\left\{E\pi_D^t(0 \cup NS): \exists\ an\ SPE\ of\ any\ subgame\ \ with\ payoffs\left(E\pi_C^t(0 \cup NS), E\pi_D^t(0 \cup NS)\right)\right\}$$

Note that all subgames following outcome $G = 0 \cup NS$ (prior to the realization of the identity of the proposer) are identical and so possess the same set of SPE values i.e. $E\Pi_i^t(0 \cup NS) \equiv E\Pi_i(0 \cup NS)$ for $\forall\ t \geq 1\ and\ \forall\ i \in (C, D)$.

Suppose that the set of SPE values is non-empty, such that there exists a (non-trivial) supremum and infimum for each set. Therefore the debtor can do no better than $E\bar{\pi}_D(0 \cup NS) \equiv sup\left(E\Pi_D(0 \cup NS)\right)$ and no worse than $E\underline{\pi}_D(0 \cup NS) \equiv inf\left(E\Pi_D(0 \cup NS)\right)$. Similarly, the creditor can do no better than $E\bar{\pi}_C(0 \cup NS) \equiv sup\left(E\Pi_C(0 \cup NS)\right)$ and no worse than $E\underline{\pi}_C(0 \cup NS) \equiv inf\left(E\Pi_C(0 \cup NS)\right)$.

Consider a subgame that begins after nature has determined that creditor makes the offer. Since the debtor will reject all offers less than $\delta E\underline{\pi}_D(0 \cup NS)$ (the worst payoff it could get after rejection), the creditor's payoff can be no greater than $V - \delta E\underline{\pi}_D(0 \cup NS)$. Since the debtor will accept any offer greater than $\delta E\bar{\pi}_D(0 \cup NS)$ (the best payoff it could get after rejection), the creditor's payoff can be no less than $V - \delta E\underline{\pi}_D(0 \cup NS)$. Now consider a subgame that begins after nature has determined that debtor makes the offer. Since the creditor will reject all offers less than $\delta E\underline{\pi}_C(0 \cup NS)$, the debtor's payoff can be no greater than $V - \delta E\underline{\pi}_C(0 \cup NS)$. Since the creditor will accept any offer greater than $\delta E\bar{\pi}_C(0 \cup NS)$, the debtor's payoff can be no less than $V - \delta E\underline{\pi}_C(0 \cup NS)$.

Moving back to the beginning of subgame, before nature has selected the proposer, we must have

$$E\bar{\pi}_C(0 \cup NS) = \alpha\delta E\bar{\pi}_C(0 \cup NS) + (1-\alpha)\left(V - \delta E\underline{\pi}_D(0 \cup NS)\right)$$

That is the best the creditor can do is a probability-weighted sum of the best it can do if the debtor is recognised and the best it can do if he (the creditor) is recognised. Analogously, we have

$$E\underline{\pi}_C(0 \cup NS) = \alpha\delta E\underline{\pi}_C(0 \cup NS) + (1-\alpha)\big(V - \delta E\bar{\pi}_D(0 \cup NS)\big),$$

$$E\bar{\pi}_D(0 \cup NS) = \alpha\left(V - \delta E\underline{\pi}_C(0 \cup NS)\right) + (1-\alpha)\delta E\bar{\pi}_D(0 \cup NS),$$

$$E\underline{\pi}_D(0 \cup NS) = \alpha\big(V - \delta E\bar{\pi}_C(0 \cup NS)\big) + (1-\alpha)\delta E\underline{\pi}_D(0 \cup NS)$$

Solving these equations, we find $E\bar{\pi}_C(0 \cup NS) = E\underline{\pi}_C(0 \cup NS) = (1-\alpha)V$, $E\bar{\pi}_D(0 \cup NS) = E\underline{\pi}_D(0 \cup NS) = \alpha V$. This establishes uniqueness of SPE continuation payoffs following$G = 0 \cup NS$.

To complete the proof, we now exhibit SPE strategies following $G = 0 \cup NS$. The strategies take the following form:

- The creditor always proposes a split in which it receives $V - \delta\alpha V = V(1-\delta\alpha)$ and accepts any offer greater than or equal to $\delta(1-\alpha)V$.
- The debtor always proposes a split in which the creditor receives $\delta(1-\alpha)V$ and accepts any offer greater than or equal to $\delta\alpha V$.

To check that these strategies are subgame perfect, we consider the following: Suppose nature chooses the debtor to make the offer. The creditor will only accept $\delta(1-\alpha)V$ since rejection yields same payoff. Therefore this acceptance rule constitutes a best response by the creditor. The debtor proposes $\delta(1-\alpha)V$ since $V\big(1-\delta(1-\alpha)\big) > \delta\alpha V$ and the creditor accepts. Analogous reasoning applies if nature chooses the creditor to make offer. Therefore, players must settle at $t = 1$ following $G = 0 \cup NS$.

Q.E.D.

4.9.2 Proof of Corollary 3

Table 4.5 - Proof of Corollary 3

$\tilde{\varepsilon}'(.)$	***First Order derivative***	$+/-$
$\frac{\partial\tilde{\varepsilon}}{\partial K_i}$	$\frac{1}{\delta\alpha F}$	> 0
$\frac{\partial\tilde{\varepsilon}}{\partial V}$	$\frac{1-\delta}{\delta\alpha F}$	> 0
$\frac{\partial\tilde{\varepsilon}}{\partial F}$	$-\frac{V(1-\delta)+K_C+K_D}{\delta\alpha F^2}$	< 0
$\frac{\partial\tilde{\varepsilon}}{\partial\delta}$	$-\frac{V+K_C+K_D}{\delta^2\alpha F}$	< 0
$\frac{\partial\tilde{\varepsilon}}{\partial\alpha}$	$-\frac{V(1-\delta)+K_C+K_D}{\delta\alpha^2 F}$	< 0

4.9.3 Computing for O, the total outstanding debt claims by C

Table 4.6 - Computing for the total outstanding debt claims

Order in Argentina Annex C	Name	ISIN codes	Coupon rate	Maturity date	Remaining Maturity (from 2001)	Principal (in USD millions)	Coupon payment (annual, USD millions)	Weights (Principal/ Aggregated Principal)	Present Value at 2001, USD millions	Future value at 2016, USD millions
41	Global bond	XS0130278467	10%, 2001-2004 12%, 2004-2008	2008	7	595	59.5, 2001-2004 71.4, 2004-2008	0.36	774.95	2292.98
9	Global bond	US040114AR16	11.375%	2017	16	419	47.66125	0.25	615.09	1819.96
17	Bond	US040114AX83	Variable (FRAN) rate*	2005	4	298	42.912	0.18	409.78	1212.49
14	Global bond	US040114GB00	10.25%	2030	29	122	12.505	0.07	173.75	514.09
7	Global bond	US040114GD65	12.375%	2012	11	113	13.98375	0.07	164.80	487.61
11	Global bond	US040114FB19	12%	2020	19	66	7.92	0.04	103.50	306.24
48	Brady Par bond	DE0004103007	5.87%	2023	22	58	3.4046	0.03	51.56	152.56
Subtotal						1671			2293.42	6785.93
Remaining 119 bonds			11.6%**		12	4360	505.7615655		6173.48	18266.56
Total						6031				25052.50

Details (i.e. bond names, ISIN codes, coupon rates, maturity dates and principal amounts) of the seven listed bonds were sourced from (Cruces and Samples, 2016). The total outstanding principal of $4.36billion across all the remaining 119 bonds was also sourced from (Cruces and Samples, 2016). The following computations were made: 1) The 'remaining maturity' column takes the difference between the bond's maturity date and 2001, 2) The 'coupon payment' column multiplies the bond's coupon rate to the principal amount, 3) The 'weights' column divides the bond's principal amount by the principal subtotal – to be used to compute the weighted-average coupon rate and remaining maturity for the remaining 119 bonds, 4) The 'present value' column discounts the bond's coupon payments and principal amounts to 2001 terms using 7.5% discount rate and then aggregates, 5) The 'future value' column' converts the bond's present values into 2016 terms.

* Variable (FRAN) rate is tied to the country risk, with a normal range of 9% to 14.4% but jumped to 101% after default. A rate of 14.4% was used to the reflect the country's economic and financial crisis prior to its default. See (Wernau, 2016).

** This is close to the average coupon rate of 10.04% across sample reported in (Schumacher, 2015, p. 156).

4.10 Heterogeneous Beliefs of Inside Options in Bargaining

4.10.1 Introduction

An inside option is the payoff a player receives from temporary disagreement in bargaining. The model of inside options is very important in sovereign debt renegotiations as the sovereign receives some breathing space from not servicing its defaulted debt. This was particularly the case for countries like Argentina that benefitted from not servicing its defaulted debt during its export boom of 2001-2005. An example of a theoretical literature that has indirectly, but not explicitly, modelled debtor inside options in sovereign debt literature is Bi (2008).[136] However, we model inside options slightly differently in this section – we assume players form expectations of their respective inside options during bargaining and their inside options become realised after litigation phases that occur during temporary disagreements in bargaining. For each litigation phase, there is a purported attachable asset that may be seized by the creditor if litigation is successful. The creditor (resp. debtor) keeps the sovereign asset and thus obtains the value of the asset following a successful (resp. unsuccessful) litigation at a cost of legal fees. In the event of an unsuccessful (resp. successful) litigation, the creditor (resp. debtor) receives nothing and pays the legal fees.

The main difference between the models in section 4.4 and section 4.10 is that while the model 4.4 is heterogeneous beliefs about outside options arising from a one-shot litigation game, this model 4.10 is about heterogeneous beliefs about inside options arising from multiple litigation games. It is also more complex as it contains the updating of beliefs along the equilibrium path of play and thus the main equilibrium result in 4.10.3.5 (Proposition 4) is indexed by the history of play.

4.10.2 Model

Consider two risk neutral players, a sovereign debtor D and a creditor C, with same discount factor $\delta \in (0,1)$. We consider a T-period alternating-offers bargaining game of debt restructuring, represented in a discrete time setting of $t = 0,1,2,3 \dots, T-1$. The game begins in $t = 0$ after a debt default. The debtor (creditor) makes an offer at t even (odd)

[136] Bi (2008) showed that delays in sovereign debt restructuring may be beneficial to allow the debtor sometime to recover from crisis. Here the bargaining pie grows overtime.

periods and responds to an offer at t odd (even) periods. Players bargain over the partition of the cake of size V, which is not accessible until settlement. This can be interpreted as the amount of funds raised from re-accessing the international capital markets that will mark the end of the debt crisis.[137]

The model extends the Rubinstein-Stahl framework where players may hold heterogeneous prior beliefs about outcomes from a temporary disagreement in bargaining. Such beliefs are reflected through optimism about court decisions on enforcement actions against the debtor's commercial assets or payment-streams (including those to exchange bondholders).[138]

Player's beliefs are assumed to be common knowledge and thus there is no asymmetric information between players in this model. Their expected payoffs from temporary disagreements in litigation are modelled as *expected inside options*.[139] These are formed as a consequence of each player's subjective anticipation of court judgement, where the creditor hopes for a successful attachment i.e. to retrieve the face value of debt, while, the debtor hopes for an unsuccessful attachment i.e. to keep the face value of debt. Thus the extension from Rubinstein is a framework modelling *endogenously determined inside options without a common prior*.

At date $t = 0$, D proposes an offer $x_C^0 \in [0, V]$ for C. If accepted, D keeps $V - x_C^0$, corresponding to an agreed split of $(x_C^0, V - x_C^0)$ and the game ends immediately. If rejected, the disagreement game $\mathcal{G}$ follows for a unit for time, where C decides between a set of actions $\{A, NA\}$. A denotes creditor seeks to *Attach* i.e. creditor attempts to enforce his debt claim against a sovereign asset through the courts.[140] NA denotes creditor decides to *Not Attach,* i.e. creditor does not seek any enforcement action against a sovereign asset in court.

If action A is made, the debtor has a singleton action set $\{P\}$ where it defends itself in court. Thus players inside option between times t and $t + 1$ depends only on the creditors choice

[137] In April 2016, Argentina issued $16.5billion of dollar-denominated debt to reportedly pay off a total £9.3billion to holdout creditors in cash. The rest of funds planned to be invested in infrastructure projects. (See (MercoPress, 2016))

[138] The author acknowledges the plaintiff initial attempt to seek post-judgement world-wide discovery for which, when granted, the litigant pursues limited discovery in foreign courts to locate, and then attempt the seizure of, assets in accordance with the law of the locale (See *NML Capital Ltd et al. V Republic Of Argentina*, 12 F.3d 842 (U.S. 2014) at 3. However, for the purpose of simplicity, the litigation process modelled in this paper skips this discovery process and considers the creditor's decision to enforce, or not, their claim against a seemingly attachable asset/payment-stream.

[139] An inside option is the utility payoff players get in the disagreement game after a rejected offer at t and before the next round of play at $(t + 1)$. In the disagreement game, players form expectations of the creditor's litigation efforts on seeking enforcement actions against the sovereign's assets/payments.

[140] Since summary judgements are granted automatically when creditor litigates after a debt default, Action A must mean creditor seeks to secure court-enforcement actions on possible attachable sovereign's assets.

of action, where heterogeneous beliefs apply from choice A (See Table 4.7 showing the breakdown of parties payoffs from different creditor's actions and realizations). Following action A, the court runs its verdict on the outcome of the litigation and then the game continues at a cost of surplus destruction by a factor δ. For simplicity, Let V be normalised to 1. The author hereafter refers 'assets/payments' as *property* for terminology convenience. Figure 4.6 below illustrates the timeline of events. W and L denote the eventual winner of the court case and loser respectively. F and K denote face value of debt and legal cost respectively.

Figure 4.6 – Timeline of events – Inside options bargaining game

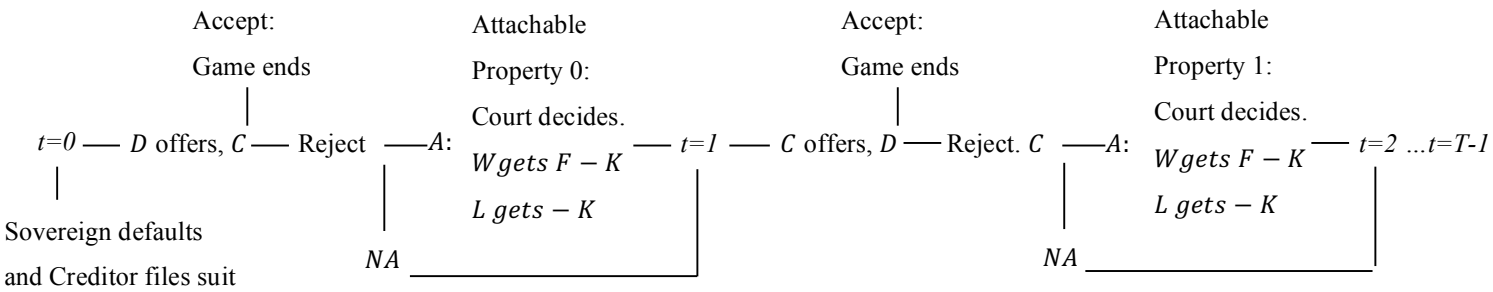


Figure 4.6 shows that the creditor can persist in its hunt for attachable property following previous unsuccessful attachments and rejected offers (unlike the model in 4.4). Thus, implicitly, the length of the game is determined by the total number of possible attachable properties.[141] Furthermore, it is assumed that these properties of interest are located within the jurisdiction governing the defaulted debt and thus the creditor can only file for attachment under the court of this jurisdiction.[142] More importantly, it is assumed that the court would always decide in favour of the creditor in subsequent litigation games following a successful attachment.[143] An additional crucial assumption is that a court's decision on a

[141] However, the game could be extended to an infinite horizon framework where the sovereign possesses an infinite number of possible attachable assets located in foreign jurisdictions. For simplicity, we consider here a framework with finite set of attachable assets. This can be supported by the prevalence of few government assets available for attachment in foreign jurisdictions (Tomz and Wright, 2013).

[142] This assumption is made in order to prevent the creditor from seeking attachments in multiple jurisdictions which will complicate the dynamic structure of the model. Allowing for multiple jurisdictions would clash with later simplifying assumptions as noted in the *supra* note 141.

[143] For example, a successful attachment on property 0 would mean that all future attempted attachments on property 1 to property $T-1$ would be successful as well. This would clash with an assumption of multiple jurisdictions.

particular lawsuit against an attachable property is final i.e. the decision cannot be reversed.[144]

The players inside options are described below (payoffs summarised in Table 4.7):

- Creditor's (resp. debtor's) utility for every unit of time when the creditor chooses NA is zero (resp. positive) for the following reasons: (i) The creditor receives no debt service. (ii) The debtor receives a relief from temporarily not making interest payments on defaulted debt and receives little disruption from trade flows.[145] As a result, the payoff to the debtor is the utility gain from retaining the claims on the defaulted debt, which is the face value F.[146]

- Player $i's$ expected utility for every unit of time when the creditor choses A depends on the following: (i) Own belief of a successful attachment (ii) Legal cost K[147], (iii) Face value F. The creditor's (resp. debtor's) expected inside option from choice A is positive with a sufficiently high expectation of a successful (resp. unsuccessful) attachment valued at F at the expense of K.[148]

Before we set the definitions below, let $H = \{n, v, o\}$ be the set of possible outcomes in $\mathcal{G}$, where n means choice A was unsuccessful, v means choice A was successful and o means choice NA was made. Let H^t be the set of all possible sequences of histories prior to date t. Denote $h^t \in H^t$ for a generic history of outcomes prior to date t (i.e. on $(0,1,2, \dots t-1)$), such that for each $s < t, n^s$ indicates an unsuccessful attachment of property s at time s, v^s indicates a successful attachment of property s at time s and o^s indicates no attempted attachment was made at time s.

[144] This assumption ensures the bargaining environment is stationary. Allowing for an appeal process may result in the debtor taking subsequent actions to launch a petition in higher courts against a lower-court ruling in favour of the creditor and thus the game would transit into a non-stationary environment.

[145] Not making payments on defaulted debt provides the sovereign breathing space for economic recovery (See (Miller and García-Fronti, 2004); (Ghosal and Miller, 2005); (Dhillon et al., 2006); (Ghosal et al., 2010)). Little disruption on trade flows is supported by (Dhillon et al., 2006). Note that the debtor suffers from high sovereign spreads following credit rating downgrades regardless of the creditor's attempt to attach or not post default.

[146] For the purpose of simplicity, claims on defaulted debt are normalized to the face value F i.e. there are no interest payment claims when creditor accelerates the debt.

[147] It is assumed that both players incur the same legal cost K irrespective of the outcome of the litigation.

[148] A highly optimistic creditor is less likely to compromise to a proposed haircut by the debtor. If eventually successful in a triggered litigation, then he will have a higher bargaining position when negotiating settlement in the next round as debtor's asset/payments become at threat for use (i.e. exposed to liquidation or restriction). In other words, creditor uses the successful attachment to retrieve the face value of debt in subsequent negotiations. Similarly, a highly optimistic debtor is less likely to satisfy creditor's full claims. If eventually creditor is unsuccessful in litigation, then the debtor's bargaining position remains unchanged since none of his asset/payments are under threat.

Definition 1 (Inside options): For a given history h^t, the utility payoff for player $i \in \{D, C\}$ obtained during temporary disagreement at period t, as a function of creditor's action in the litigation game at t, is denoted as $g_i^t(\cdot, h^t)$. Player $i's$ expected utility payoff from temporary disagreement when the creditor chooses A at period t given h^t is denoted as $Eg_i^t(A, h^t)$.

Definition 2 (Bargaining surplus): Where beliefs are compatible (i.e. in the absence of heterogeneous beliefs), there always exists a bargaining surplus in settlement defined by $\mathbf{1} - \boldsymbol{F} - \boldsymbol{\delta} \in [\mathbf{0}, \mathbf{1})$ when the creditor will choose NA in $\mathcal{G}$, or otherwise defined by $\mathbf{1} - \boldsymbol{F} + \mathbf{2}\boldsymbol{K} - \boldsymbol{\delta} \in [\mathbf{0}, \mathbf{1})$ when the creditor will choose A in $\mathcal{G}$.

The bargaining surplus is the extra surplus parties realize from settlement, over the surplus realized from delay. With no heterogeneous beliefs, parties immediately settle at $t = 0$ since the bargaining surplus condition always holds.[149]

Definition 3 (Beliefs): Let $q_C^t(h^t) \in [0,1]$ denote the creditor's belief of a successful attachment at t given history h^t and $q_D^t(h^t) \in [0,1]$ denote the debtor's belief of an unsuccessful attachment given history h^t. The combination of player's beliefs is captured by parameter $\boldsymbol{y^t(h^t) = q_C^t(h^t) + q_D^t(h^t)}$**.** This measures the degree of belief incompatibility. We say players are optimistic when $y^t(h^t) > 1$ and pessimistic when $y^t(h^t) < 1$. Beliefs are consistent when $y^t(h^t) = 1$.

Definition 4 (Degree of optimism): The degree of optimism that generates delay in agreement at t is measured by $\varepsilon^t \equiv y^t - 1 \in (0,1]$. Higher ε^t means player's beliefs are more optimistic while lower ε^t means beliefs are less optimistic. When $\varepsilon^t = 1$, player's beliefs are extremely optimistic. When $\varepsilon^t = 0$, player's beliefs are consistent. Define $\tilde{\varepsilon}^t$ as player's degree of optimism that makes them indifferent between settling and delaying at t.

The paper studies the case of optimism in driving delays in settlement. Players update their beliefs according to the following remark below. The paper does not study the case of pessimism since it is not considered a threat to settlement.

Remark 1 (Beliefs Update): Players' prior beliefs are fixed over the course of the game until one of the following events occurs after which they update their beliefs: (1) the court

[149] (See Section 4.10.5.1 of the Appendix 4.10.5, which initially shows the step-by-step process for solving for a $T = 2$ to a $T = 4$ period game before establishing the equilibrium results for the general case T). Here equilibrium offers are a function of common (true) knowledge of success/failure of creditor litigation efforts. The conditions suggest that the gains from settlement at $t = 0$ when the creditor will attach are higher than the gains from settlement $t = 0$ when the creditor will not attach. This means attaching is costly for both players.

declares successful action A in $\mathcal{G}$; (2) the game reaches the settlement deadline following a sequence of unsuccessful action A and/or NA in $\mathcal{G}$. Players' beliefs are otherwise independent of history until one of these two events occurs. Event (1) is identified with any history h^t of a type set of histories with v^{t-1}. We denote this type set of histories associated with Event (1) as $H_V^t \in H^t$. Event (2) is identified with any history h^{T-1} of a type set of histories with $n^{T-2} or\ o^{T-2}$. We denote this type set of histories associated with Event (2) as $H_N^{T-1} \in H^t$. Therefore, players' posterior beliefs, as a function of any history $h^t \in H_V^t$, are $q_C^t(h^t \in H_V^t) = 1, q_D^t(h^t \in H_V^t) = 0$, while posterior beliefs, as a function of any history $h^{T-1} \in H_N^{T-1}$, are $q_C^t(h^{T-1} \in H_N^{T-1}) = 0, q_D^t(h^{T-1} \in H_N^{T-1}) = 1$.

Table 4.7 - Inside options payoffs at time *t*

Creditor's Action		**Debtor's Payoff**	**Creditor's Payoff**
NA		$g_D^t\big(NA, (h^t, o^t)\big) = F$	$g_C^t\big(NA, (h^t, o^t)\big) = 0$
A	*Expected*	$Eg_D^t(A, h^t) = q_D^t(h^t) \cdot F - K$	$Eg_C^t(A, h^t) = q_C^t(h^t) \cdot F - K$
	Realised	$g_D^t\big(A, (h^t, n^t)\big) = F - K\ \ or$ $g_D^t\big(A, (h^t, v^t)\big) = -K$	$g_C^t\big(A, (h^t, n^t)\big) = -K\ \ or$ $g_C^t\big(A, (h^t, v^t)\big) = F - K$

*Note $0 < K < F < 1$.[150]

Table 4.7 shows that players inside options are endogenously determined by the creditor's action. Note that player i's expected inside option from A is positive when $q_i^t > K/F$.

Remark 2 (Terminal Payoff): The following assumptions are made about the terminal payoffs, which they receive having failed to reach any settlement by deadline:

- In the event of a successful attachment at any point in the game (indicated by any history $h^t \in H_V^t$ at time t), the creditor's terminal payoff is the face value F which he walks away with while the debtor's terminal payoff is zero as he leaves the negotiations with no write-off of debt.

[150] Note that the face value F is the size of the judgement decreed by the judge for the winning party. Nonetheless, parties always settle outside the court (whether pre/post attachment hunt) and thus the judge's ruling only seeks to inform the bargaining outcome rather than determine the pie distribution.

- In the event that there is no successful attachment across the bargaining game (indicated by any history $h^{T-1} \in H_N^{T-1}$ at time $T-1$, the creditor's terminal payoff is zero as he receives no compensation from defaulted debt while the debtor's terminal payoff is F which he retains.

4.10.3 Characterization of Equilibrium

The notion of equilibrium is subgame perfection (SPE). We first characterize the solution for a simple two-period game. We then derive the solution for a three-period game to show the effect of persistent beliefs. We later construct the general case for any T-period game.

4.10.3.1 Example 1 ($T = 2$)

Consider a two-period game with $t = 0,1$. Let $x_j^t(h^t)$ denote the equilibrium offer proposed by player i for player j at time t given history h^t.

Applying backward induction, at $t = 1$ creditor proposes to the debtor one of the following:

- $x_D^1(v^0) = 0$ if at $t = 0$ players failed to reach a settlement and action A was made and successful.
- $x_D^1(n^0) = F$ if at $t = 0$ players failed to reach a settlement and action A was made and unsuccessful.
- $x_D^1(o^0) = F$ if at $t = 0$ players failed to reach a settlement and action NA was made

In $\mathcal{G}$ of $t = 0$, creditor chooses A if $q_C^0 > \frac{K}{F}$ and chooses NA otherwise.

If $q_C^0 \leq \frac{K}{F}$, at $t = 0$ both players know that creditor will chose NA and the respective inside options of the creditor and the debtor would be $g_C^0(NA, o^0) = 0$ and $g_D^0(NA, o^0) = F$. In the bargaining round of $t = 0$, debtor will propose

$$x_C^0 = \delta(1-F) \;\; iff \;\; 1 - \delta(1-F) \geq F + \delta F$$

This gives $1 \geq F + \delta$ which corresponds to the bargaining surplus and thus players settle at $t = 0$.

If $q_C^0 > \frac{K}{F}$, at $t = 0$ both players know that creditor will chose A and the respective expected inside options of the creditor and the debtor would be $Eg_C^0(A) = q_C^0 \cdot F - K$ and $Eg_D^0(A) = q_D^0 \cdot F - K$. Note h^0 is $\emptyset$. In the bargaining round of $t = 0$, debtor will propose

$$x_C^0 = q_C^0 F - K + q_C^0 \delta(1) + (1 - q_C^0)\delta(1-F) \;\; iff$$

$$1 - (q_C^0 F - K + q_C^0 \delta(1) + (1 - q_C^0)\delta(1 - F)) \geq q_D^0 F - K + q_D^0 \delta(F) + (1 - q_D^0)\delta(0)$$

Simplifying, players settle at $t = 0 \ \ iff$

$$1 \geq y^0 F(1 + \delta) - 2K + \delta(1 - F) \tag{4.6}$$

and delay agreement otherwise. Player's delay provided beliefs are sufficiently optimistic to a degree of

$$\boldsymbol{\varepsilon^0 > \tilde{\varepsilon}^0 \ \equiv \frac{1 - F + 2K - \delta}{F(1 + \delta)}} \tag{4.7}$$

This is intuitive since if the numerator, the gains from immediate settlement, is high then a higher degree of optimism is required for delay. Below summaries the main result.

Unique SPE with delay: With $q_C^0 > \frac{K}{F} and \ \ y^0 > 1$, player's delay settlement at $t = 0$ for any parameter combination (δ, F, K) for which $\varepsilon^0 > \tilde{\varepsilon}^0$ where ε^0 is defined as the degree of optimism. The creditor chooses to 'attach' in $\mathcal{G}$ following $t = 0$. Parties eventually settle at $t = 1$.

Example 1 characterises the result for a two-period game. Before we derive the solution under a three-period game, we introduce some equilibrium notations helpful for expressing equilibrium results in longer games.

4.10.3.2 Equilibrium Notation

Define $h_n^t \in H^t$ as a specific history before date t where for each $s < t$, creditor made an unsuccessful attachment i.e. $h_n^t \equiv \ (n^0, n^1 \dots, n^{t-2}, n^{t-1})$.

For the remainder of the paper, we focus on the case $q_C^0 > \frac{K}{F}$ where players may delay agreement as seen in Example 1.[151] Thus, creditor's optimal strategy in $\mathcal{G}$ is to choose A for $\forall \ t \in (0, 1, \dots, T - 2)$. Note that $q_i^t(h_n^t) = q_i^0$ for $\forall \ i$.

Given a strategy profile, aspects of the equilibrium path of play are summarised by the following variables: $\Omega_t(h_n^t); x_j^t(h^t, \Omega_t(h_n^t)); E\pi_j^t(h^t, \Omega_t(h_n^t)); \tilde{q}_i^0(\Omega_0(\emptyset))$

- Define $\Omega_t(h_n^t)$ as the equilibrium sequence of expectations of settlement and/or delay, as a function of history h_n^t, from date t for all future times $\tau \in [t + 1, t + 2, \dots T - 2]$. For each τ, $\Omega_t(h_n^t)$ indicates a binary variable s_τ or d_τ, where s_τ stands

[151] There is no threat to immediate agreement in any T-period game when $q_C^0 \leq \frac{K}{F}$

for anticipated settlement at τ while d_τ stands for anticipated delay at τ. $\Omega_t(h_n^t)$ has $1x(T-2-t)$ dimensions.

- Define $x_j^t\left(h^t, \Omega_t(h_n^t)\right)$ as the equilibrium offer proposed by player i for player j at time t given history h^t and $\Omega_t(h_n^t)$ conditional on $h^t = h_n^t$.[152]
- Define $E\pi_j^t(h_n^t, \Omega_t(h_n^t))$ as the equilibrium expected continuation payoff of player j at time t given history h_n^t and $\Omega_t(h_n^t)$.
- Define $\tilde{q}_i^0(\Omega_0(\emptyset))$ as player i 's prior belief for a given set of parameters (δ, F, K, q_j^0) and $\Omega_0(\emptyset)$ that makes the players indifferent settling and delaying at $t = 0$.

4.10.3.3 Example 2 ($T = 3$)

Consider a three-period game with $t = 0,1,2$.

Walking backwards, at $t = 2$ debtor either proposes $x_C^2(h_n^2) = 0$ if $h^2 = h_n^2 \equiv (n^0, n^1)$ or $x_C^2(h^2 \in H_V^2) = F$ if $h^2 = (n^0, v^1) \in H_V^2$. Note that $\Omega_2(h_n^2)$ is $\emptyset$.

If $h^1 = h_n^1 \equiv (n^0)$, at $t = 1$ creditor will propose

$$\begin{aligned} x_D^1(n^0) &= E\pi_D^1(n^0) \\ &\equiv q_D^1(n^0)\left(F - K + \delta\left(1 - x_C^2(h_n^2)\right)\right) \\ &\quad + \left(1 - q_D^1(n^0)\right)\left(-K + \delta\left(1 - x_C^2(H_V^2)\right)\right) \end{aligned}$$

$$\begin{aligned} iff\ \ & 1 - x_D^1(n^0) \geq E\pi_C^1(n^0) \\ &\equiv q_C^1(n^0)\left(F - K + \delta\left(x_C^2(H_V^2)\right)\right) + \left(1 - q_C^1(n^0)\right)\left(-K + \delta\left(x_C^2(h_n^2)\right)\right) \end{aligned}$$

Note that $\Omega_1(n^0)$ is also $\emptyset$[153]. As $q_C^1(n^0) = q_C^0$ and $q_D^1(n^0) = q_D^0$, simplifying, players settle at $t = 1$ iff

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta\left(x_C^2(H_V^2) - x_C^2(h_n^2)\right) \tag{4.8}$$

[152] For instance in a five-period game, where $h^1 = h_n^1 = n^0$ and $\Omega_1(h_n^1) = (\mathrm{d}_2, \mathrm{s}_3)$, $x_D^1\left(n^0, \Omega_1(n^0)\right)$ represents the equilibrium offer proposed by the creditor to the debtor at $t = 1$ when action A was unsuccessful at $t = 0$ and when it is anticipated that players would delay at $t = 2$ but settle at $t = 3$ with beliefs $q_C^1(h_n^1) = q_C^0$ and $q_D^1(h_n^1) = q_D^0$. Alternatively, for $h^1 = v^0, x_D^1(v^0)$ represents the equilibrium offer proposed by the creditor to the debtor at $t = 1$ when action A was successful at $t = 0$. $\Omega_1(h_n^1)$ becomes irrelevant as beliefs update to $q_C^1(v^0) = 1$ and $q_D^1(v^0) = 0$.

[153] Players do not form expectations of settlement or delay at deadline $T - 1$ since they would always settle by deadline. Hence $\Omega_1(h_n^1)$ is $\emptyset$.

Players delay when Condition (4.8) fails to hold. Note that substituting for $x_C^2(h_n^2)$ and $x_C^2(H_V^2)$ gives Condition (4.6).

If however $h^1 = (v^0) \in H_V^1$, at $t = 1$ $q_C^1(v^0) = 1$ and $q_D^1(v^0) = 0$ and therefore creditor will propose

$$x_D^1(v^0) = -K + \delta\left(1 - x_C^2(H_V^2)\right) iff\ 1 - x_D^1(v^0) \geq F - K + \delta\left(x_C^2(H_V^2)\right)$$

Simplifying gives the bargaining surplus condition. Therefore, players settle at $t = 1$ following history $h^1 = (v^0)$.

Now let's consider the case when Condition (4.8) holds. Here, $\Omega_0(\emptyset) = s_1$. At $t = 0$ the debtor proposes

$$x_C^0(s_1) = q_C^0\left(F - K + \delta\left(1 - x_D^1(v^0)\right)\right) + (1 - q_C^0)\left(-K + \delta\left(1 - x_D^1(n^0)\right)\right) iff$$

$$1 - x_C^0(s_1) \geq q_D^0\left(F - K + \delta\left(x_D^1(n^0)\right)\right) + (1 - q_D^0)\left(-K + \delta\left(x_D^1(v^0)\right)\right)$$

Simplifying, players settle at $t = 0$ iff

$$1 \geq y^0 F - 2K + \delta + (y - 1)\delta\left(x_D^1(n^0) - x_D^1(v^0)\right) \tag{4.9}$$

Substituting for $x_D^1(n^0)$and $x_D^1(v^0)$ simplifies to

$$1 \geq y^0 F(1 + \delta q_D^0(1 + \delta)) - 2K + \delta(1 - F q_D^0(1 + \delta)) \tag{4.10}$$

Players delay when Condition (4.10) fails to hold. Therefore, from the creditor's perspective, players delay agreement at $t = 0$ for $\forall\ q_C^0 > \tilde{q}_C^0(s_1) \in \left(\frac{K}{F}, 1\right]$ where

$$\boldsymbol{\tilde{q}_C^0(s_1) \equiv \frac{1 - q_D^0 F + 2K - \delta + \delta q_D^0 F(1 + \delta)(1 - q_D^0)}{F(1 + \delta q_D^0(1 + \delta)}} \tag{4.11}$$

Similarly from the debtor's perspective, players delay agreement at $t = 0$ for $\forall\ q_D^0 > \tilde{q}_D^0(s_1) \in [0,1]$ that solves

$$\boldsymbol{0 = \left[q_C^0 F - 2K + \delta - 1\right] + q_D^0\left[F\left(1 - \delta(1 + \delta)\left(1 - q_C^0\right)\right)\right] + \left(q_D^0\right)^2[\delta F(1 + \delta)]} \tag{4.12}$$

Now let's consider the case when Condition (4.8) does not hold. Here, $\Omega_0(\emptyset) = d_1$. At $t = 0$ the debtor proposes

$$x_C^0(d_1) = q_C^0\left(F - K + \delta\left(1 - x_D^1(v^0)\right)\right) + (1 - q_C^0)\left(-K + \delta\left(E\pi_C^1(n^0)\right)\right) \; iff$$

$$1 - x_C^0(d_1) \geq q_D^0\left(F - K + \delta\left(E\pi_D^1(n^0)\right)\right) + (1 - q_D^0)\left(-K + \delta\left(x_D^1(v^0)\right)\right)$$

Simplifying, players settle at $t = 0$ iff

$$\begin{aligned} 1 \geq y^0 F - 2K + q_C^0\delta - (y^0 - 1)\delta x_D^1(v^0) + (1 - q_C^0)\delta E\pi_C^1(n^0) \\ + q_D^0\delta E\pi_D^1(n^0) \end{aligned} \tag{4.13}$$

Substituting for $x_D^1(v^0)$, $E\pi_C^1(n^0)$ and $E\pi_D^1(n^0)$ simplifies to

$$\begin{aligned} 1 \geq\; & y^0\left(F - \delta(-K + \delta - \delta F)\right) - 2K + q_C^0\delta + (q_D^0)^2\delta^2 \\ & + \delta\left(1 + q_D^0\delta(1 - q_D^0)\right)(-K + \delta - \delta F) \\ & + \delta(q_C^0 - (q_C^0)^2 + (q_D^0)^2)(F - K) + \delta^2 q_C^0(1 - q_C^0)F \\ & - \delta(1 - q_C^0)^2 K \end{aligned} \tag{4.14}$$

Players delay when Condition (4.14) fails to hold. Therefore, from the creditor's perspective, players delay agreement at $t = 0$ for $\forall\; q_C^0 > \tilde{q}_C^0(d_1) \in \left(\frac{K}{F}, 1\right]$ that solves

$$\begin{aligned} \mathbf{0} = \; & \left[\boldsymbol{q_D^0}\left(\boldsymbol{F - \delta(-K + \delta - \delta F)\left(1 - \delta\left(1 - q_D^0\right)\right)}\right) + \left(\boldsymbol{q_D^0}\right)^{\boldsymbol{2}}\boldsymbol{\delta(\delta + F - K)}\right. \\ & \left. \boldsymbol{+ \delta(-K + \delta - \delta F) - 2k - \delta K - 1}\right] \\ & \boldsymbol{+ q_C^0[F(1 + \delta + 2\delta^2) + \delta(1 - \delta + 2K)] - \left(q_C^0\right)^2[\delta F(1 + \delta)]} \end{aligned} \tag{4.15}$$

Similarly from the debtor's perspective, players delay agreement at $t = 0$ for $\forall\; q_D^0 > \tilde{q}_D^0(d_1) \in [0,1]$ that solves

$$\begin{aligned} \mathbf{0} = \; & \left[\boldsymbol{q_C^0}\left(\boldsymbol{F(1 + \delta + 2\delta^2) + \delta(1 - \delta + 2K)}\right) + \left(\boldsymbol{q_C^0}\right)^{\boldsymbol{2}}\left(\boldsymbol{\delta F(1 + \delta)}\right)\right. \\ & \left. \boldsymbol{+ \delta(-K + \delta - \delta F) - 2k - \delta K - 1}\right] \\ & \boldsymbol{+ q_D^0[F - \delta(-K + \delta - \delta F)(1 - \delta)]} \\ & \boldsymbol{- \left(q_D^0\right)^2\left[\delta\left(F(1 + \delta^2) + (1 - \delta)(\delta - K)\right)\right]} \end{aligned} \tag{4.16}$$

Below summaries the main results (i.e. conditions ((4.11), (4.12)) and ((4.15), (4.16))).

Unique SPE with delay: With $y^0 > 1$, player's delay settlement at $t = 0$ for any parameter combination (δ, F, K) for which $q_C^0 > \tilde{q}_C^0(\Omega_0(\emptyset)) \in \left(\frac{K}{F}, 1\right]$ and $q_D^0 > \tilde{q}_D^0(\Omega_0(\emptyset)) \in [0,1]$.

The creditor chooses A in $t = 0{,}1$ disagreement games. Parties will settle on or before $t = 2$.

The following proposition characterises the equilibrium result for any T-period game.

4.10.3.4 Proposition 3

For any T-period game with $q_C^0 > \frac{K}{F}$ *and* $y^0 > 1$ *, player's delay settlement at* $t = 0$ *when*

$$\mathbf{1} < \boldsymbol{y^0 F - 2K + q_C^0 \delta - (y^0 - 1)\delta x_D^1(v^0) + q_D^0 \delta E\pi_D^1\left(n^0, \Omega_1(n^0)\right)} + \boldsymbol{\left(1 - q_C^0\right)\delta E\pi_C^1\left(n^0, \Omega_1(n^0)\right)} \quad (4.17)$$

Where $x_D^1(v^0) = f(\delta, F, K, T)$ *and* $E\pi_i^1\left(n^0, \Omega_1(n^0)\right) = f\left(\delta, F, K, T, q_i^0, q_j^0\right)$ $for\ \forall i \neq j$*.The creditor optimal strategy in* $\mathcal{G}$ *is A for all* $t \leq T - 2$*. Parties will settle on or before* $t = T - 1$*. (See Proof of Proposition 3 in section 4.10.5.2).*

For any T-period game, there exist a total of 2^{T-2} possible delay-conditions at $t = 0$. The unique delay-condition that will apply at $t = 0$ depends on $\Omega_0(\emptyset)$ which has $1x(T-2)$ dimensions.

Proposition 4 below is simply a restatement of Proposition 3 with reference to players beliefs.

4.10.3.5 Proposition 4

For any T-period game with $y^0 > 1$, player's delay settlement at $t = 0$ for any $q_C^0 \in \left(\frac{K}{F}, 1\right]$ and $q_D^0 \in [0{,}1]$ such that, for a given set of parameters (F, K, δ),

$$\begin{aligned} 0 \leq \psi_T^0\left(\Omega_0(\emptyset)\right) \\ &\equiv y^0 F - 2K + q_C^0\delta - (y^0 - 1)\delta x_D^1(v^0) \\ &+ q_D^0 \delta E\pi_D^1\left(n^0, \Omega_1(n^0)\right) + (1 - q_C^0)\delta E\pi_C^1\left(n^0, \Omega_1(n^0)\right) - 1 \end{aligned} \quad (4.18)$$

Where $x_D^1(v^0)$ and $E\pi_i^1\left(n^0, \Omega_1(n^0)\right)$ are expressed in Proposition 3.

$\psi_T^0\left(\Omega_0(\emptyset)\right)$ can be interpreted as the combined continuation payoff of players less the bargaining pie at $t = 0$ for a given T game. If this is significantly high, players will delay agreement.

4.10.3.6 Corollary 4

For a two-period game, $\tilde{\varepsilon}^0$ is increasing with K and decreasing with F and δ. For a three-period game, denote $\psi_3^0\left(\Omega_0(\emptyset)\right) \in \left\{\psi_3^0(s_1), \psi_3^0(d_1)\right\}$ where $\psi_3^0(s_1)$ denotes the RHS of

Condition (4.10) and $\psi_3^0(d_1)$denotes RHS of Condition (4.14). $\psi_{\Omega_0}^0$ is decreasing with K and increasing with F and δ.

Proof.

For a $T = 2$ game,

$$\frac{\partial \tilde{\varepsilon}^0}{\partial K} = \frac{2}{(1+\delta)F} > 0, \qquad \frac{\partial \tilde{\varepsilon}^0}{\partial F} = -\frac{2K - \delta + 1}{(1+\delta)F^2} < 0, \qquad \frac{\partial \tilde{\varepsilon}^0}{\partial \delta} = -\frac{2K - F + 2}{F(1+\delta)^2} < 0.$$

For a $T = 3$ game,

$$\frac{\partial \psi_3^0(s_1)}{\partial K} = -2 < 0, \quad \frac{\partial \psi_3^0(s_1)}{\partial F} = y^0 + (y^0 - 1)\delta q_C^0(1+\delta) > 0\,,$$

$$\frac{\partial \psi_3^0(s_1)}{\partial \delta} = 1 + (y^0 - 1)q_C^0 F(1+2\delta) > 0$$

$$\frac{\partial \psi_3^0(d_1)}{\partial K} = -2 - 2\delta(1 - q_C^0) - \delta^3 + \delta q_D^0(1 - \delta(1 - q_D^0)) < 0,$$

$$\frac{\partial \psi_3^0(d_1)}{\partial F} = y^0 + \delta q_C^0(1 - q_C^0) + \delta^2(y^0 - 1 + \delta + q_C^0(1 - q_C^0) - q_D^0\delta(1 - q_D^0)) > 0\,,$$

$$\begin{aligned}\frac{\partial \psi_3^0(d_1)}{\partial \delta} = {} & 3\delta^2(q_D^0(1-F)(1-q_D^0) + F - K) \\ & + 2\delta(1 + q_D^0 F - q_D^0(1+K)(1-q_D^0) - F(1-q_D^0)^2 - q_C^0) + q_D^0 K \\ & - (1 - q_C^0)(q_C^0 F - 2K) + q_C^0 > 0\end{aligned}$$

Q.E.D

4.10.4 Conclusion

This section considered a model of heterogeneous beliefs regarding inside options from bargaining in the context of a sovereign debt dispute. It showed that players delay settlement for any length of game when they have sufficient optimistic beliefs about their inside options, i.e. payoffs from temporary breakdowns in negotiations, which are determined by court outcomes from creditor litigation efforts against attachable sovereign assets. The model results were first shown in reduced time settings of two- or three period-games to illustrate how the condition for delay varies across time horizons. In an alternative Rubinstein bargaining framework, where beliefs are updated according to a specific framework, the section illustrates the interplay between optimism, inside options and bargaining delays.

4.10.5 Appendix for Section 4.10 Inside options model

4.10.5.1 Construction of Bargaining Surplus Conditions

4.10.5.1.1 Equilibrium Solution I ($T = 2$ game)

Consider a two-period bargaining game which ends at $t = 1$. Suppose it is common knowledge that strategy A in $\mathcal{G}$ at $t = 0$ would be unsuccessful in court.

Let $z_j^t(h^t)$ denote the equilibrium offer proposed by player i for player j at time t given history h^t and $y^t(h^t) = 1$.

Using backward induction, at $t = 1$ creditor proposes

$$z_D^1(n^0) = F$$

The creditor will optimally NA in $\mathcal{G}$ since $g_C^0(A, n^0) = -K < g_C^0(NA, o^0) = 0$ and thus

At $t = 0$ debtor proposes

$$z_C^0(\emptyset) = \delta(1 - F)$$

$$iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(n^0) + F$$

$$\mathbf{1 - F - \delta \geq 0} \tag{4.19}$$

The LHS of Condition (4.19) defines the bargaining surplus in a game where creditor chooses NA in $\mathcal{G}$. Condition (4.19) provides the case for the first-best benchmark and it is assumed to always hold. The intuition is this: For players to settle immediately, the bargaining pie needs to be sufficiently high compensating both the debtor's payoff from an unsuccessful A and the discounted gains from future settlement.

Now suppose it is common knowledge that strategy A in $\mathcal{G}$ at $t = 0$ would be successful in court. Again using backward induction, at $t = 1$ creditor proposes

$$z_D^1(v^0) = 0$$

The creditor will optimally A in $\mathcal{G}$ since $g_C^0(A, v^0) = F - K > g_C^0(NA, o^0) = 0$ and thus

At $t = 0$ debtor proposes

$$z_C^0(\emptyset) = F - K + \delta$$

$$iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(v^0) - K$$

$$\mathbf{1 - F + 2K - \delta \geq 0} \tag{4.20}$$

The LHS of Condition (4.19) defines the bargaining surplus in a game of compatible beliefs about the creditor's strategy A. Note that Condition (4.20) is satisfied by Condition (4.19). Below establishes that the bargaining surplus condition remains consistent irrespective of the length of game.

4.10.5.1.2 Equilibrium Solution II ($T = 3$ game)

Consider a three-period bargaining game which ends at $t = 2$. Here, we consider three possible scenarios.

Firstly, suppose it is common knowledge that strategy A at $t = 0,1$ would be unsuccessful in court. The creditor will optimally NA in $\mathcal{G}$ of $t = 0,1$. Therefore, $h^2 = (o^0, o^1)$

Applying backward induction, at $t = 2$ debtor proposes

$$z_C^2(o^0, o^1) = 0$$

At $t = 1$ creditor proposes

$$z_D^1(o^0) = \delta + F$$

At $t = 0$ debtor proposes

$$z_C^0(\emptyset) = \delta(1 - \delta - F)$$

$$iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(o^0) + F$$

This simplifies to Condition (4.19).

Secondly, suppose it is common knowledge that strategy A would be unsuccessful at $t = 0$ but successful at $t = 0$. The creditor will optimally NA in $\mathcal{G}$ of $t = 0$ but A in $\mathcal{G}$ of $t = 1$. Therefore, $h^2 = (o^0, v^1)$. Again applying backward induction, at $t = 2$ debtor proposes

$$z_C^2(o^0, v^1) = F$$

At $t = 1$ creditor proposes

$$z_D^1(o^0) = \delta(1 - F) - K$$

$$iff\ 1 - z_D^1(o^0) \geq F - K + \delta F$$

This simplifies to Condition (4.20).

At $t = 0$ debtor proposes

$$z_C^0(\emptyset) = \delta\left(1 - z_D^1(o^0)\right)$$

$$iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(o^0) + F$$

This simplifies to Condition (4.19).

Thirdly, suppose it is common knowledge that strategy A in $\mathcal{G}$ would be successful in $t = 0,1$.[154] The creditor will optimally A in $\mathcal{G}$ of $t = 0,1$. Therefore, $h^2 = (v^0, v^1)$. Again applying backward induction, at $t = 2$ debtor proposes

$$z_C^2(v^0, v^1) = F$$

At $t = 1$ creditor proposes

$$z_D^1(v^0) = \delta(1 - F) - K$$

$$iff\ 1 - z_D^1(v^0) \geq F - K + \delta F$$

This simplifies to Condition (4.20).

At $t = 0$ debtor proposes

$$z_C^0(\emptyset) = F - K + \delta\left(1 - z_D^1(v^0)\right)$$

$$iff\ \ 1 - z_C^0(\emptyset) \geq \delta z_D^1(v^0) - K$$

This also simplifies to Condition (4.20).

4.10.5.1.3 Equilibrium Solution III ($T = 4$ game)

Consider a four-period bargaining game which ends at $t = 3$. Here, we consider four possible scenarios.

Firstly, suppose it is common knowledge that strategy A at $t = 0,1,2$ would be unsuccessful in court. The creditor will optimally NA in $\mathcal{G}$ of $t = 0,1,2$. Therefore, $h^3 = (o^0, o^1, o^2)$. Thus, at $t = 3$ creditor proposes $z_D^3(o^0, o^1, o^2) = F$. At $t = 2$ debtor proposes $z_C^2(o^0, o^1) = \delta(1 - F)$. At $t = 1$ creditor proposes $z_D^1(o^0) = \delta\left(1 -\right.$

[154] Recall that according to model assumptions, successful attachment at any t means successful attachment at all future period $t + 1, t + 2\ \ldots, T - 2$.

$z_C^2(o^0, o^1)\big) + F$. At $t = 0$ debtor proposes $z_C^0(\emptyset) = \delta\big(1 - z_D^1(o^0)\big)$ which is accepted immediately by Condition (4.19).

Secondly, suppose it is common knowledge that strategy A would be unsuccessful at $t = 0{,}1$ but successful at $t = 2$. The creditor will optimally NA in $\mathcal{G}$ of $t = 0{,}1$ but A in $\mathcal{G}$ of $t = 2$. Therefore, $h^3 = (o^0, o^1, v^2)$. Thus, at $t = 3$ creditor proposes $z_D^3(o^0, o^1, v^2) = 0$. At $t = 2$ debtor proposes $z_C^2(o^0, o^1) = F - K + \delta$. At $t = 1$ creditor proposes $z_D^1(o^0) = \delta\big(1 - z_C^2(o^0, o^1)\big) + F$. At $t = 0$ debtor proposes $z_C^0(\emptyset) = \delta\big(1 - z_D^1(o^0)\big)$ which is accepted immediately by Condition (4.19).

Thirdly, suppose it is common knowledge that strategy A would be unsuccessful at $t = 0$ but successful at $t = 1{,}2$. The creditor will optimally NA in $\mathcal{G}$ of $t = 0$ but A in $\mathcal{G}$ of $t = 1{,}2$. Therefore, $h^3 = (o^0, v^1, v^2)$. Thus, at $t = 3$ creditor proposes $z_D^3(o^0, v^1, v^2) = 0$. At $t = 2$ debtor proposes $z_C^2(o^0, v^1) = F - K + \delta$. At $t = 1$ creditor proposes $z_D^1(o^0) = \delta\big(1 - z_C^2(o^0, v^1)\big) - K$. At $t = 0$ debtor proposes $z_C^0(\emptyset) = \delta\big(1 - z_D^1(o^0)\big)$ which is accepted immediately by Condition (4.19).

Fourthly, suppose it is common knowledge that strategy A in $\mathcal{G}$ would be successful in $t = 0{,}1{,}2$. The creditor will optimally A in $\mathcal{G}$ of $t = 0{,}1{,}2$. Therefore, $h^3 = (v^0, v^1, v^2)$. At $t = 3$ creditor proposes $z_D^3(v^0, v^1, v^2) = 0$. At $t = 2$ debtor proposes $z_C^2(v^0, v^1) = F - K + \delta$. At $t = 1$ creditor proposes $z_C^2(v^0) = \delta\big(1 - z_C^2(v^0, v^1)\big) - K$. At $t = 0$ debtor proposes $z_C^0(\emptyset) = F - K + \delta\big(1 - z_D^1(v^0)\big)$ which is accepted immediately by Condition (4.20).

4.10.5.1.4 Equilibrium Solution IV (for any general T)

The equilibrium solutions I, II, III show that there is always immediate settlement in a game without optimistic beliefs. Below establishes same result for any T-period game.

Suppose it is common knowledge that strategy A in $\mathcal{G}$ would be successful in $t = 0$. The creditor will optimally A in $\mathcal{G}$ for all $t = 0{,}1{,}..{,}T - 2$. Thus, $h^{T-1} = (v^0, v^1, \dots, v^{T-2})$. At $t = 0$ debtor proposes $z_C^0(\emptyset) = F - K + \delta\big(1 - z_D^1(v^0)\big) iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(v^0) - K$. This simplifies to Condition (4.20).

Now suppose that respective court decisions across the game are known at $t = 0$. Thus, the creditor's optimal strategy in each $\mathcal{G}$ is also known at start of game. Suppose it is common knowledge that strategy A in $\mathcal{G}$ would be unsuccessful in $t = 0$. Then creditor will optimally NA in $\mathcal{G}$ of $t = 0$. Therefore corresponding history of play would be $h^{T-1} = (o^0, \dots)$ known

at start of game. At $t = 0$ debtor proposes $z_C^0(\emptyset) = \delta\left(1 - z_D^1(o^0)\right) iff\ 1 - z_C^0(\emptyset) \geq \delta z_D^1(o^0) + F$. This simplifies to Condition (4.19).

4.10.5.2 Proof of Proposition 3

We initially derive the equilibrium solutions under a $T = 4$ period game, and then summarise the results for any T period game. We focus on the case $q_C > \frac{K}{F}$ where creditor chooses A in every $\mathcal{G}$.

4.10.5.2.1 $T = 4$ game

Solving backwards, at $t = 3$ creditor proposes $x_D^3(h_n^3) = F$ or $x_D^3(h^3 \in H_V^3) = 0$

At $t = 2$, if $h^2 = h_n^2$, debtor proposes

$$\begin{aligned} x_C^2(h_n^2) &= E\pi_C^2(h_n^2) \\ &\equiv q_C^1(h_n^2)\left(F - K + \delta\left(1 - x_D^3(H_V^3)\right)\right) \\ &\quad + \left(1 - q_C^1(h_n^2)\right)\left(-K + \delta\left(1 - x_D^3(h_n^3)\right)\right) \end{aligned}$$

$$\begin{aligned} iff\ 1 - x_C^2(h_n^2) &\geq E\pi_D^2(h_n^2) \\ &\equiv q_D^1(h_n^2)\left(F - K + \delta x_D^3(h_n^3)\right) + \left(1 - q_D^1(h_n^2)\right)\left(-K + \delta x_D^3(H_V^3)\right) \end{aligned}$$

This simplifies to

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta\left(x_D^3(h_n^3) - x_D^3(H_V^3)\right) \tag{4.21}$$

Players delay when Condition (4.21) is not satisfied. Substituting for $x_D^3(h_n^3)$ and $x_D^3(H_V^3)$ gives Condition (4.6).

If however $h^2 \in H_V^2$, at $t = 2$, debtor proposes

$$x_C^2(H_V^2) = F - K + \delta\left(1 - x_D^3(H_V^3)\right)\ iff\ 1 - x_C^{2^v} \geq \left(-K + \delta\left(x_D^3(H_V^3)\right)\right)$$

This simplifies to the Bargaining surplus condition and thus players settle at $t = 2$ following history $h^2 \in H_V^2$.

At $t = 1$, if $h^1 = h_n^1$ and $\Omega_1(h_n^1) = s_2$, creditor proposes

$$x_D^1(h_n^1, s_2) = E\pi_D^1(h_n^1, s_2)$$
$$\equiv q_D^1(h_n^1)\left(F - K + \delta\left(1 - x_C^2(h_n^2)\right)\right)$$
$$+ \left(1 - q_D^1(h_n^1)\right)\left(-K + \delta\left(1 - x_C^2(H_V^2)\right)\right) \; iff$$

$$1 - x_D^1(h_n^1, s_2) \geq E\pi_C^{1^{n,s_2}}$$
$$\equiv q_C^1(h_n^1)\left(F - K + \delta x_C^2(H_V^2)\right) + \left(1 - q_C^1(h_n^1)\right)\left(-K + \delta x_C^2(h_n^2)\right)$$

This simplifies to

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta\left(x_C^2(H_V^2) - x_C^2(h_n^2)\right) \tag{4.22}$$

Players delay when Condition (4.22) is not satisfied. However if at $t = 1$, $h^1 = h_n^1$ and $\Omega_1(h_n^1) = d_2$, creditor proposes

$$x_D^1(h_n^1, d_2) = E\pi_D^1(h_n^1, d_2)$$
$$\equiv q_D^1(h_n^1)\left(F - K + \delta E\pi_D^2(h_n^2)\right)$$
$$+ \left(1 - q_D^1(h_n^1)\right)\left(-K + \delta\left(1 - x_C^2(H_V^2)\right)\right) \; iff$$

$$1 - x_D^1(h_n^1, d_2) \geq E\pi_C^1(h_n^1, d_2)$$
$$\equiv q_C^1(h_n^1)\left(F - K + \delta x_C^2(H_V^2)\right) + \left(1 - q_C^1(h_n^1)\right)\left(-K + \delta E\pi_C^2(h_n^2)\right)$$

This simplifies to

$$1 \geq y^0 F - 2K + (1 - q_D^0)\delta + (y^0 - 1)\delta x_C^2(H_V^2) + q_D\delta E\pi_D^2(h_n^2)$$
$$+ (1 - q_C^0)\delta E\pi_C^2(h_n^2) \tag{4.23}$$

Players delay when Condition (4.23) is not satisfied. However if at $t = 1$, $h^1 \in H_V^1$, creditor proposes

$$x_D^1(H_V^1) = -K + \delta\left(1 - x_C^2(H_V^2)\right) \; iff \; 1 - x_D^1(H_V^1) \geq F - K + \delta x_C^2(H_V^2)$$

This simplifies to the Bargaining surplus condition and thus players settle at $t = 1$.

At $t = 0$, if $\Omega_0(\emptyset) = s_1, s_2$, debtor proposes

$$x_C^0(s_1, s_2) = q_C^0\left(F - K + \delta(1 - x_D^1(H_V^1))\right) + (1 - q_C^0)\left(-K + \delta(1 - x_D^1(h_n^1, s_2))\right) iff$$

$$1 - x_C^0(s_1, s_2) \geq q_D^0(F - K + \delta x_D^1(h_n^1, s_2)) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta(x_D^1(h_n^1, s_2) - x_D^1(H_V^1)) \quad (4.24)$$

However, if at $t = 0$, $\Omega_0(\emptyset) = d_1, s_2$, debtor proposes

$$x_C^0(d_1, s_2) = q_C^0\big(F - K + \delta(1 - x_D^1(H_V^1))\big) + (1 - q_C^0)(-K + \delta E\pi_C^1(h_n^1, s_2))\ iff$$

$$1 - x_C^0(d_1, s_2) \geq q_D^0(F - K + \delta E\pi_D^1(h_n^1, s_2)) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to

$$\begin{aligned} 1 \geq y^0 F - 2K + q_C^0\delta - (y^0 - 1)\delta x_D^1(H_V^1) + q_D^0\delta E\pi_D^1(h_n^1, s_2) \\ + (1 - q_C^0)\delta E\pi_C^1(h_n^1, s_2) \end{aligned} \quad (4.25)$$

However, if at $t = 0$, $\Omega_0(\emptyset) = s_1, d_2$, debtor proposes

$$x_C^0(s_1, d_2) = q_C^0\big(F - K + \delta(1 - x_D^1(H_V^1))\big) + (1 - q_C^0)(-K + \delta E\pi_C^1(h_n^1, d_2))\ iff$$

$$1 - x_C^0(s_1, d_2) \geq q_D^0(F - K + \delta E\pi_D^1(h_n^1, d_2)) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta(x_D^1(h_n^1, d_2) - x_D^1(H_V^1)) \quad (4.26)$$

However, if at $t = 0$, $\Omega_0(\emptyset) = d_1, d_2$, debtor proposes

$$x_C^0(d_1, d_2) = q_C^0\big(F - K + \delta(1 - x_D^1(H_V^1))\big) + (1 - q_C^0)(-K + \delta E\pi_C^1(h_n^1, d_2))\ iff$$

$$1 - x_C^0(d_1, d_2) \geq q_D^0(F - K + \delta E\pi_D^1(h_n^1, d_2)) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to4

$$\begin{aligned} 1 \geq y^0 F - 2K + q_C^0\delta - (y^0 - 1)\delta x_D^1(H_V^1) + q_D^0\delta E\pi_C^1(h_n^1, d_2) \\ + (1 - q_C^0)\delta E\pi_D^1(h_n^1, d_2) \end{aligned} \quad (4.27)$$

Players delay agreement at $t = 0$ if any of the 4 conditions (4.24) – (4.27) do not hold.

4.10.5.2.2 *T* game

At $t = 0$, for a given $\Omega_0(\emptyset) = \big(s_1, \Omega_1(h_n^1)\big)$ where $h_n^1 \equiv n^0$ and $H_V^1 \equiv v^0$, debtor proposes

$$\begin{aligned} x_C^0(s_1, \Omega_1(h_n^1)) \\ = q_C^0\big(F - K + \delta(1 - x_D^1(H_V^1))\big) \\ + (1 - q_C^0)\big(-K + \delta(1 - x_D^1(h_n^1, \Omega_1(h_n^1)))\big)\ iff \end{aligned}$$

$$1 - x_C^0(s_1, \Omega_1(h_n^1)) \geq q_D^0(F - K + \delta x_D^1(h_n^1, \Omega_1(h_n^1))) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to

$$1 \geq y^0 F - 2K + \delta + (y^0 - 1)\delta(x_D^1(h_n^1, \Omega_1(h_n^1)) - x_D^1(H_V^1)) \tag{4.28}$$

If however at $t = 0$, $\Omega_0(\emptyset) = (d_1, \Omega_1(h_n^1))$, debtor proposes

$$x_C^0(d_1, \Omega_1(h_n^1)) = q_C^0\big(F - K + \delta(1 - x_D^1(H_V^1))\big) + (1 - q_C^0)(-K + \delta E\pi_C^1(h_n^1, \Omega_1(h_n^1))) \; iff$$

$$1 - x_C^0(d_1, \Omega_1(h_n^1)) \geq q_D^0(F - K + \delta E\pi_D^1(h_n^1, \Omega_1(h_n^1))) + (1 - q_D^0)(-K + \delta x_D^1(H_V^1))$$

This simplifies to

$$1 \geq y^0 F - 2K + q_C^0\delta - (y^0 - 1)\delta x_D^1(H_V^1) + q_D^0\delta E\pi_D^1(h_n^1, \Omega_1(h_n^1)) + (1 - q_C^0)\delta E\pi_C^1(h_n^1, \Omega_1(h_n^1)) \tag{4.29}$$

When generalising to any T period game, conditions (4.28) and (4.29) apply, each implicit with 2^{T-3} conditions. This provides a total of 2^{T-2} settlement-conditions. Ω_1 would contain $(T - 3)$ elements and thus $x_D^1(H_V^1), x_D^1\big(h_n^1, \Omega_1(h_n^1)\big), E\pi_C^1\big(h_n^1, \Omega_1(h_n^1)\big)\; and\; E\pi_D^1(h_n^1, \Omega_1(h_n^1))$ would become functions of T. Players delay at $t = 0$ when the relevant settlement-condition for given parameter values $\left(\delta, F, K, q_D^0, q_C^0 > \frac{K}{F}\right)$ is not satisfied. Note that condition (4.29) simplifies to condition (4.28) when $x_D^1(h_n^1, \Omega_1(h_n^1)) = E\pi_D^1(h_n^1, \Omega_1(h_n^1))$ and $1 - x_D^1(h_n^1, \Omega_1(h_n^1)) \geq E\pi_C^1(h_n^1, \Omega_1(h_n^1))$ i.e. when players expect to settle at $t = 1$.

Q.E.D

4.11 Yildiz (2003) exposition with delay: Heterogeneous Beliefs of the Recognition Process

4.11.1 Introduction

In this section, we explore Yildiz (2003) model of heterogeneous beliefs in bargaining and consider the case for delay under different extensions (illustrated here as examples), such as varying degrees of excessive optimism and time preference, along with evolving beliefs. We introduce the model below and solve for the equilibrium outcomes.

This section varies from the model presented in section 4.4 in that it considers the case for where players are optimistic about their ability to make proposals in the future – a source of bargaining power. In the model in 4.4, we considered the case where nature randomly selects the proposer for each period of the remainder of the game. In the model players do not form beliefs of the ability to propose offers. We relax that assumption for this model, introducing the ability for players to form beliefs of the recognition process and provides conditions for delay under excessive optimism. In this model, there are no outside options, inside options or legal costs. We simply consider the standard Rubinstein bargaining extensions without common priors of the recognition process. This model is important when applied to the context of sovereign debt restructuring because a debtor's initial ability to propose offers signals his bargaining strength in a model with complete information. When parties hold optimistic expectations about their future bargaining power, it is not no surprise that bargaining will end in impasse. Yildiz (2003) paper is theoretical framework that shows that players settle immediately in a finite game despite having optimistic beliefs about the recognition process. However, section 4.11 shows that delay may still arise with highly patient players (an attribute that characterises vulture funds and enduring debtors). We also allow for the updating of beliefs through receiving imperfect signals of future bargaining power. We show from this that highly patient players may prefer to delay negotiations when signals are weak. This result is intuitive because from weak signals[155] mean that signals are less informative of future bargaining power and this reinforces the role that optimism plays in generating delays with sufficiently patient players.

[155] Players receive signals of their future recognition probability after a player has been recognised in any given round of bargaining. Strong signals would mean that a player is more (resp. less) likely to be recognised in the next round having been recognised (resp. not recognised) in the current round. Weak signals would mean that the contrary, i.e. that a player is not more (resp. not less) likely to be recognised in the next round having been recognised (resp. not recognised) in the current round.

4.11.2 Model

Consider two risk neutral players, a sovereign and a creditor, having complete information with potentially different discount rates denoted by r_i, where i can be any player $i = 1,2$. A finite T-period bargaining game of debt restructuring is represented in a discrete time setting of $t = 0,1,2 \ldots T-1$ and begins in $t = 0$ after a debt default. The sovereign remains in default until it settles its creditor, after which it is able to re-access world capital markets and gain V (the surplus gross of settlement payments). V can be interpreted as the output gains from economic recovery after settlement.[156]For simplicity, Let V be normalised to 1. If no agreement is reached by the deadline $t = T-1$, the economy experiences a chronic recession that reduces the bargained surplus (i.e. the anticipated output gains from settlement) to nought.

Similar to Yildiz (2003), the model extends the Rubinstein-Stahl framework where players may hold optimistic beliefs about the recognition process determining which player will make an offer in every period. Player's beliefs are assumed to be common knowledge and thus similar to Yildiz (2003), the model drops the common prior assumption in the Rubinstein-Stahl framework meaning the actual recognition process, determined by nature, remains unknown throughout the course of the game. When a player is recognised for any given t, he proposes an offer $x \in [0,1]$ to the unrecognised player and keeps the remaining $1-x$, corresponding to an agreed spilt $(x, 1-x)$ of the surplus. When an offer is accepted the game ends immediately but when rejected otherwise, the game continues to the next period at a cost of a surplus destruction by a factor $\delta_i = \frac{1}{1+r_i} \in (0,1)$. Let Player 1 be sovereign and Player 2 be creditor for convenience. Denote β_i^t as the probability that player i assigns to being recognised in period t.

4.11.3 Example 1 (excessive optimism and common discount rates)

Consider a $T = 4$ period game where $\forall\, i, t$: $\beta_i^t = 1, \delta_i = \delta$.

The Yildiz (2003) immediate agreement solution

[156] These may include higher tax receipts and national output from increased domestic & foreign investment and employment generation enjoyed through improved consumer and business confidence. The issuance of GDP-linked exchange bonds suggests that the negotiated settlement can be made contingent on national output. See *supra* note 45 for V interpretation in some theoretical literatures.

Walking backwards, at $t = 3$ each player is willing to accept any division of the surplus since it is worth zero afterwards and therefore the recognised player offers zero which is accepted and takes the whole pie 1. At $t = 2$, the recognised player proposes δ (making the opponent indifferent between accepting and rejecting) if $1 - \delta > \delta$ so that his payoff $1 - \delta$ would be greater than his continuation payoff δ. Therefore, provided $\delta < 1/2$, at $t = 1$ the recognised player will propose $\delta(1 - \delta)$ iff

$$1 - \delta(1 - \delta) > \delta(1 - \delta) \tag{4.30}$$

Condition (4.30) holds for all $\delta \in (0,1)$. At $t = 0$ the recognised player will propose $\delta(1 - \delta(1 - \delta))$ iff

$$1 - \delta\big(1 - \delta(1 - \delta)\big) > \delta(1 - \delta(1 - \delta)) \tag{4.31}$$

Condition (4.31) holds for all $\delta \lesssim 0.648$. Therefore, in equilibrium there is immediate agreement of share $(\delta - \delta^2 + \delta^3, 1 - \delta + \delta^2 - \delta^3)$ if $\delta < 0.5$ with agreement at all stages, which is common knowledge at the start of the game.[157]

Consider now that $\delta > 1/2$, players know that there will be no agreement at $t = 2$. Therefore, at $t = 1$ the recognised player will propose δ^2 if $1 - \delta^2 > \delta^2$. Therefore provided $\delta < 1/\sqrt{2}$, at $t = 0$ the recognised player will propose $\delta(1 - \delta^2)$ if $1 - \delta(1 - \delta^2) > \delta(1 - \delta^2)$ which holds for all $\delta \in (0,1)$. Therefore, likewise there is immediate agreement of share $(\delta - \delta^3, 1 - \delta + \delta^3)$ if $\delta < \frac{1}{\sqrt{2}} \approx 0.707$ with agreement at all stages but $t = 2$, known to all at start of game.

Consider now that $\delta > 1/\sqrt{2}$, players know that there will be no agreement at $t = 1, 2$. Therefore at $t = 0$, the recognised player will propose δ^3 if $1 - \delta^3 > \delta^3$. Therefore, provided $\delta < 1/\sqrt[3]{2} \approx 0.794$, there will be immediate agreement of share $(\delta^3, 1 - \delta^3)$.

[157] For a T (even-period) game, when $\delta < \frac{1}{2}$, the equilibrium share will be $(\delta - \delta^2 + \delta^3 - \delta^4 \ldots - \delta^{T-2} + \delta^{T-1}, 1 - \delta + \delta^2 - \delta^3 + \delta^4 \ldots + \delta^{T-2} - \delta^{T-1})$, where as for a T (odd-period) game, equilibrium share will be $(\delta - \delta^2 + \delta^3 - \delta^4 \ldots + \delta^{T-2} - \delta^{T-1}, 1 - \delta + \delta^2 - \delta^3 + \delta^4 \ldots - \delta^{T-2} + \delta^{T-1})$. This result coincides with the solution under the alternating offers Rubinstein game where as $T \rightarrow \infty$, the proposer makes an offer $\frac{\delta}{1+\delta}$, which the responder accepts, and keeps for himself $\frac{1}{1+\delta}$. In contrast with the Rubinstein infinite solution where the equilibrium share remains the same irrespective of the size of δ, a bargaining game with excessive optimism needs certain conditions on δ to be satisfied for settlement.

Therefore, in a T=4 game, for any $\delta \in \left(0, \frac{1}{\sqrt[3]{2}}\right)$ there is immediate agreement. The intuition is this: through backward induction the players knowing that they may not be able to reach a settlement at later rounds induces them to agree sooner.

An alternative scenario with delay

Yildiz (2003) paper does not identify the possibility of delay with sufficiently patient players. For any $\delta > 1/\sqrt[3]{2}$, there is delay up until $t = 3$ as the recognised player is unable to make an indifferent offer to the opponent without making himself worse off.

T-period game solution

For a T-period game, provided $\delta \in \left(0, \frac{1}{T-1\sqrt{2}}\right)$, there is immediate agreement. However, for any $\delta > \frac{1}{T-1\sqrt{2}}$, we observe delay in all periods $t < T-1$ and eventual settlement at $T-1$. For any $\delta \in \left(\frac{1}{T-k-2\sqrt{2}}, \frac{1}{T-k-1\sqrt{2}}\right)$ for which $1-\delta^{T-(k+1)} > \delta^{T-(k+1)}$ and where $1-\delta^{T-l} < \delta^{T-l}$ for all $\forall\, l \in [k+2, T-1]$, agreement occurs in all $t \leq k$ with no agreement in all rounds $t \in (k, T-2]$. For k odd, equilibrium share is $(\delta-\delta^2+\delta^3-\delta^4 \ldots+\delta^k-\delta^{T-1}, 1-\delta+\delta^2-\delta^3+\delta^4 \ldots-\delta^k+\delta^{T-1})$. For k even, equilibrium share is $(\delta-\delta^2+\delta^3-\delta^4 \ldots-\delta^k+\delta^{T-1}, 1-\delta+\delta^2-\delta^3+\delta^4 \ldots+\delta^k-\delta^{T-1})$. Fixing δ and letting $T \rightarrow \infty$, we obtain agreement in more rounds of the game. As $T \rightarrow \infty$, lower bound on δ for delay which is $\frac{1}{T-1\sqrt{2}}$ tends to 1 and thus its more difficult to obtain delay. Fixing T and letting $\delta \rightarrow 1$, we obtain agreement in less rounds.

In summary, for any finite game where $\delta > \frac{1}{T-1\sqrt{2}}$ delay is likely to happen with excessive optimism.

4.11.4 Example 2 (excessive optimism and different discount rates)

For convenience, consider a T=3 period game where $\forall\, i, t$: $\beta_i^t = 1$. At $t = 2$, any recognised player $i \in \{1,2\}$ offers opponent, player j, δ_j if $1-\delta_j > \delta_i$. If this condition holds, then at $t = 1$ any recognised player i offers $\delta_j(1-\delta_i)$ if $1-\delta_j(1-\delta_i) > \delta_i(1-\delta_j)$ which holds for any $\delta_i \in (0,1)$. Thus in $t = 0$, any recognised player i offers $\delta_j\left(1-\delta_i(1-\delta_j)\right)$ if $1-\delta_j\left(1-\delta_i(1-\delta_j)\right) > \delta_i\left(1-\delta_j(1-\delta_i)\right)$ which holds if $1 > \delta_i + \delta_j$. Therefore,

equilibrium share is $(\delta_j\left(1-\delta_i(1-\delta_j)\right), 1-\delta_j\left(1-\delta_i(1-\delta_j)\right))$ provided $1>\delta_i+\delta_j$.[158]

If $1<\delta_j+\delta_i$, players know that there will be no agreement at $t=2$. Therefore, at $t=1$ any recognised player i offers δ_j^2 if $1-\delta_j^2>\delta_i^2$. If this condition holds, then at $t=0$, the recognised player i offers $\delta_j(1-\delta_i^2)$ if $1-\delta_j(1-\delta_i^2)>\delta_i\left(1-\delta_j^2\right)$ which holds for any $\delta_i\in(0,1)$. Therefore, equilibrium share is $(\delta_j(1-\delta_i^2), 1-\delta_j(1-\delta_i^2))$ provided $1>\delta_i^2+\delta_j^2$.

If $1-\delta_j^2<\delta_i^2$, players know that there will be no agreement at $t=1$. Therefore, at $t=0$ any recognised player i offers δ_j^3 if $1-\delta_j^3>\delta_i^3$. Therefore, equilibrium share is $(\delta_j^3, 1-\delta_j^3)$ provided $1>\delta_i^3+\delta_j^3$.

Therefore, for any given (δ_i,δ_j) combination for which $1<\delta_i^3+\delta_j^3$, delay occurs until $t=3$.

For any given T-period game, if $1<\delta_i^{T-1}+\delta_j^{T-1}$ we obtain delay of T-2 periods. As $T\rightarrow\infty$, it becomes increasingly difficult to obtain delay. However, fixing T and letting any $\delta_i\rightarrow 1$, we obtain delay of T-2 periods.

4.11.5 Example 3 (different optimistic beliefs and different discount rates)

Similarly consider a T=3 period game where $\forall\, i,t\colon \beta_i^t=\beta_i$. At $t=2$, any recognised player i offers $\beta_j\delta_j$ if $1-\beta_j\delta_j>\beta_i\delta_i$. If this condition holds, then at $t=1$ any recognised player i offers $\delta_j\left(\beta_j(1-\beta_i\delta_i)+\left(1-\beta_j\right)\left(\beta_j\delta_j\right)\right)$ if $1-\delta_j\left(\beta_j(1-\beta_i\delta_i)+\left(1-\beta_j\right)\left(\beta_j\delta_j\right)\right)>$

[158] Again when $1>\delta_i+\delta_j$, the equilibrium offer for a T (even period) game will be $\left(\delta_j-\delta_i\delta_j+\delta_i\delta_j^2-\delta_i^2\delta_j^2+\delta_i^2\delta_j^3-\delta_i^3\delta_j^3\ldots+\delta_i^{\frac{T}{2}}\delta_j^{\frac{T}{2}-1}-\delta_i^{\frac{T}{2}+1}\delta_j^{\frac{T}{2}-1}+\delta_i^{\frac{T}{2}+1}\delta_j^{\frac{T}{2}}\right)$, where as for a T (odd period) game the equilibrium offer will be $\left(\delta_j-\delta_i\delta_j+\delta_i\delta_j^2-\delta_i^2\delta_j^2+\delta_i^2\delta_j^3-\delta_i^3\delta_j^3\ldots-\delta_i^{\frac{T-1}{2}}\delta_j^{\frac{T-1}{2}}+\delta_i^{\frac{T-1}{2}}\delta_j^{\frac{T+1}{2}}-\delta_i^{\frac{T+1}{2}}\delta_j^{\frac{T+1}{2}}\right)$. This result also coincides with the solution under the alternating offers Rubinstein game where as $T\rightarrow\infty$, the proposer makes an offer $\frac{\delta_j(1-\delta_i)}{1+\delta_i\delta_j}$, which the responder accepts, and keeps for himself $\frac{1-\delta_j}{1+\delta_i\delta_j}$. Under the Rubinstein case, with any combination of δ_i,δ_j, the responder always accepts this equilibrium offer, unlike under optimism.

$\delta_i(\beta_i(1-\beta_j\delta_j)+(1-\beta_i)(\beta_i\delta_i))$ which holds for all $\beta_i \in (0.5,1]$ and $\delta_i \in (0,1)$. Thus in $t=0$, any recognised player i offers:

$$\delta_j\begin{pmatrix}\beta_j\left(1-\delta_i\left(\beta_i(1-\beta_j\delta_j)+(1-\beta_i)(\beta_i\delta_i)\right)\right)+\\(1-\beta_j)\delta_j\left(\beta_j(1-\beta_i\delta_i)+(1-\beta_j)(\beta_j\delta_j)\right)\end{pmatrix} iff$$

$$\begin{aligned}1-\delta_j\Big(&\beta_j\left(1-\delta_i\left(\beta_i(1-\beta_j\delta_j)+(1-\beta_i)(\beta_i\delta_i)\right)\right)\\&+(1-\beta_j)\delta_j\left(\beta_j(1-\beta_i\delta_i)+(1-\beta_j)(\beta_j\delta_j)\right)\Big)\\&>\delta_i\Big(\beta_i\left(1-\delta_j\left(\beta_j(1-\beta_i\delta_i)+(1-\beta_j)(\beta_j\delta_j)\right)\right)\\&+(1-\beta_i)\delta_i\left(\beta_i(1-\beta_j\delta_j)+(1-\beta_i)(\beta_i\delta_i)\right)\Big)\end{aligned} \tag{4.32}$$

Condition (4.32) holds provided $1-\beta_j\delta_j > \beta_i\delta_i$. Thus, players reach immediate settlement.

If $1 < \beta_i\delta_i + \beta_j\delta_j$, players know that there will be no agreement at $t=2$. Therefore, at $t=1$ any recognised player i offers $\beta_j\delta_j^2$ if $1-\beta_j\delta_j^2 > \beta_i\delta_i^2$. If this condition holds, then at $t=0$, the recognised player i offers $\delta_j\left(\beta_j(1-\beta_i\delta_i^2)+(1-\beta_j)(\beta_j\delta_j^2)\right)$ if $1-\delta_j\left(\beta_j(1-\beta_i\delta_i^2)+(1-\beta_j)(\beta_j\delta_j^2)\right) > \delta_i(\beta_i(1-\beta_j\delta_j^2)+(1-\beta_i)(\beta_i\delta_i^2))$ which holds for all $\beta_i \in (0.5,1]$and $\delta_i \in (0,1)$. Thus, the players also reach immediate settlement.

If $1 > \beta_i\delta_i^2 + \beta_j\delta_j^2$, players know that there will be no agreement at $t=1$. Therefore, at $t=0$ any recognised player i offers $\beta_j\delta_j^3$ if $1-\beta_j\delta_j^3 > \beta_i\delta_i^3$. Again, the players reach immediate settlement.

However, if $1 < \beta_i\delta_i^3 + \beta_j\delta_j^3$, we obtain delay of 2 periods. For any given T-period game, if

$$1 < \beta_i\delta_i^{T-1} + \beta_j\delta_j^{T-1} \tag{4.33}$$

we obtain delay of T-2 periods. This condition (4.33) is the delay condition. Therefore where $\beta_i = \beta_j = \beta$ and $\delta_i = \delta_j = \delta$, we obtain delay if $\delta > \frac{1}{\sqrt[T-1]{2\beta}}$. Note that if $\beta = 0.5$, where players have compatible beliefs, regardless of the length of game and level of δ, we obtain immediate agreement.

4.11.6 Example 4 (different degrees of patience)

Case of opponent being relatively impatience: With $\beta_i^t = \beta_j^t = \beta$, what happens if δ_j falls?

Assume $\delta_i = \delta, \delta_j = \alpha\delta,\ \alpha \in (0,1)$. We compare our results to condition (4.33). Thus $\beta\delta^{T-1} + \beta(\alpha\delta)^{T-1} < 1 \rightarrow \delta < \frac{1}{\sqrt[T-1]{\beta(1+\alpha^{T-1})}}$. Notice that $\forall\, \alpha$: $\frac{1}{\sqrt[T-1]{\beta(1+\alpha^{T-1})}} > \frac{1}{\sqrt[T-1]{2\beta}}$ which means for any given α settlement is more likely. As parameters fall i.e. $\alpha \rightarrow 0$ *or* $\beta \rightarrow 0.5$, ceteris paribus, delay becomes less likely.

Case of opponent being relatively patience: With $\beta_i^t = \beta_j^t = \beta$, what happens if δ_j rises?

Assume $\delta_i = \delta, \delta_j = (1+\alpha)\delta,\ \alpha \in (0,1)$, also assume $\delta \leq 0.5$ (as $\delta_j\ must\ be\ less\ than\ 1$). We compare our results to condition (4.33). Thus $\beta\delta^{T-1} + \beta((1+\alpha)\delta)^{T-1} < 1 \rightarrow 0.5 \geq \delta > \frac{1}{\sqrt[T-1]{\beta(1+(1+\alpha)^{T-1})}}$. As parameters rise $\alpha \rightarrow 1$ *or* $\beta \rightarrow 1$, ceteris paribus, delay becomes more likely.

4.11.7 Example 5 (evolving beliefs)

Let $\forall\, i, \beta_i^0 = 0.9$[159], $\delta_i = \delta$. Assume that in every round player's revise their beliefs of being recognised in future having observed who was recognised at the current round of play. There are two types of revision: (1) upward revision i.e. upgrading belief of being recognised the next round $\beta_i^1 > \beta_i^0$. (2) downward revision i.e. downgrading belief of being recognised the next round $\beta_i^1 < \beta_i^0$.

Assume there is a commonly known signal generating process that reveals in each period, after a player is recognised, the conditional probability distribution over players' propensity to be recognised in every future period. The unrecognised player and the recognised player use the signal to update their belief of being recognized the next period. Assume the signal

[159] According to Bayes Rule, there would be no updating of the beliefs if we consider $\beta_i = 1$ as $1 - \beta_i = 0$.

generating process is independent of any previous signals and that signals are imperfectly correlated with the true underlying distribution, which is unknown.[160]

Firstly, consider the case $\boldsymbol{T = 2}$ and that Player i is recognised in $t = 0$. Also consider that Player j downgrades her belief after observing Player i is recognised in $t = 0$ and Player i upgrades her belief after observing she's recognised in $t = 0$. The prior beliefs are $\beta_i^0 = \beta_j^0 = 0.9$ and the posterior beliefs are $\beta_j^1 < \beta_j^0, \beta_i^1 > \beta_i^0$.

Definition of notations:

$\beta_j^1 = P(R_j/N) =$ Player $j's$ updated belief of being recognised at $t = 1$ having not been recognised at $t = 0$.

$\beta_i^1 = P(R_i/R) =$ Player $i's$ updated belief of being recognised at $t = 1$ having been recognised at $t = 0$.

Signals:

- $P_{NR} = P(N/R) =$ Probability of not being recognised at $t = 1$ having been recognised at $t = 0$. Let $P_{NR} \leq 0.5$ [161]
- $P_{NN} = P(N/N) =$ Probability of not being recognised at $t = 1$ having not been recognised at $t = 0$. $P_{NN} \geq 0.5$. Note $P_{NR} \leq P_{NN}$
- $P_{RN} = 1 - P_{NN} = P(R/N) =$ Probability of being recognised at $t = 1$ having not been recognised at $t = 0$.
- $P_{RR} = 1 - P_{NR} = P(R/R) =$ Probability of being recognised at $t = 1$ having been recognised at $t = 0$. $P_{RN} \leq P_{RR}$

Therefore, according to Bayes Rule

$$\beta_j^1 = P(R_j/N) = \frac{\beta_j^0 * P_{NR}}{\beta_j^0 * P_{NR} + (1 - \beta_j^0) * P_{NN}} \tag{4.34}$$

$$\beta_i^1 = P(R_i/R) = \frac{\beta_i^0 * P_{RR}}{\beta_i^0 * P_{RR} + (1 - \beta_i^0) * P_{RN}} \tag{4.35}$$

[160] If the true underlying distribution were known, i.e. the probability of being chosen or not in the next period conditional on being chosen or not this period, then there would be no need to form beliefs. The reason why we have beliefs in the first place is because the true prior probability distribution is unknown.

[161] $P_{NR} \leq 0.5$ assumption has been made so that the signals work according to standard intuition i.e. that if one is chosen to propose this period, the chances of not been chosen the next period is likely to be relatively low.

Table 4.8 outlines the results at $t = 0$ for the cases below:

Table 4.8 – Immediate settlement conditions for $T = 2$ game

Case	$PC^{(*)}$	Solution for immediate settlement	Condition for delay
$P_{NR} = 0.2, P_{NN} = 0.8$	$1 - \frac{9}{13}\delta > \frac{36}{37}\delta$	$\delta^* \in (0,0.601)$	$\delta > 0.601$
$P_{NR} = 0.3, P_{NN} = 0.8$	$1 - \frac{27}{35}\delta > \frac{63}{65}\delta$	$\delta^* \in (0,0.575)$	$\delta > 0.575$
$P_{NR} = 0.3, P_{NN} = 0.7$	$1 - \frac{27}{34}\delta > \frac{21}{22}\delta$	$\delta^* \in (0,0.572)$	$\delta > 0.572$
$P_{NR} = 0.3, P_{NN} = 0.6$	$1 - \frac{9}{11}\delta > \frac{63}{67}\delta$	$\delta^* \in (0,0.569)$	$\delta > 0.569$

*Participation condition (PC) for recognised player i: $1 - \beta_j^1 \delta_j > \beta_i^1 \delta_i$

Results of the benchmark case with no updating for $\delta_i = \delta_j = \delta$ and $\forall\, i, t$: $\beta_i^t = 0.9$ is PC: $1 - \beta_j \delta_j > \beta_i \delta_i \rightarrow 1 - 0.9\delta > 0.9\delta \rightarrow \delta < \frac{5}{9}$

Therefore for any $\delta^* \in (0,0.556)$, we should obtain immediate agreement at $t = 0$ and thus any $\delta > \frac{5}{9}$ generates delay.

It is clear from the results in Table 4.8 that introducing the revision of beliefs yield easier settlement, albeit weak signals (as we move down the table) are more likely to yield delay outcomes. Settlement outcomes are more pronounced when the signal reveals a lower prospect of not being recognised at $t = 1$ having been recognised at $t = 0$ and a higher prospect of not being recognised at $t = 1$ having not been recognised at $t = 0$. This means that an unrecognised player downgrades his belief following a signal suggesting lower prospect of being recognised in the next period. Meanwhile, the recognised player upgrades his belief following a signal suggesting higher prospect of being recognised in the next period.

Thus, the δ condition for settlement is subject to a higher upper bound because the rate of change of the unrecognised player's belief is higher than the rate of change of the recognised player's belief i.e. the unrecognised player's belief drops at a higher rate than the rate of increase in the recognised player's belief. Therefore, the recognised player can make higher δ offers for immediate agreement (though subject to an upper bound) provided that unrecognised player reacts more strongly in revising his belief than the recognised player. This means that for any given value of δ, the rate of increase in the recognised player's

payoff is more than the rate of increase in the expected discounted payoff from waiting. Simply put it, for each value of δ, the unrecognised player's offer has reduced, the effect of which could be offset by higher values of δ satisfying the participation condition that enables immediate agreement. To conclude therefore, with the rate of decrease in β_j being higher than the rate of increase in β_i, the δ condition for settlement accommodates for higher $\delta's$ s.t. an upper bound inducing a higher propensity for immediate agreement.

Studying the case of uninformative signals yields the same results as the case of no signals. When $P_{NR} = P_{NN}\ and\ P_{RN} = P_{RR}$, then $\beta_j^1 = \beta_j^0\ and\ \beta_i^1 = \beta_i^0$ leading to no change in the δ condition for settlement. Therefore, the previous model where there is no updating is a special case of the Bayesian framework of beliefs, coinciding with the case where signals are not informative. The point here is that if signals are uninformative, regardless of the priors, players would not update their beliefs and over-confidence will be an issue persisting for a prolonged period of time.

Secondly, consider the case $\boldsymbol{T = 3}$ and $\forall\ i$: $\delta_i = \delta$. In the benchmark case of no updating where $\forall\ i, t\ \beta_i^t = 0.9$, similar to the analysis performed above, one out of the three situations below will occur.

(1) If at $t = 1, 1 - \beta_j\delta_j > \beta_i\delta_i$, this means $1 - 0.9\delta > 0.9\delta \rightarrow \delta < \frac{5}{9}$. Therefore, at $t = 0$, recognised player i will offer $\delta_j\left(\beta_j(1 - \beta_i\delta_i) + \left(1 - \beta_j\right)\left(\beta_j\delta_j\right)\right)$ if $1 - \delta_j\left(\beta_j(1 - \beta_i\delta_i) + \left(1 - \beta_j\right)\left(\beta_j\delta_j\right)\right) > \delta_i\left(\beta_i\left(1 - \beta_j\delta_j\right) + (1 - \beta_i)(\beta_i\delta_i)\right) \rightarrow 1 - 2\delta\left(0.9(1 - 0.9\delta) + (1 - 0.9)(0.9\delta)\right) \rightarrow 1.44\delta^2 - 1.8\delta + 1 > 0$ which holds for any $\delta \in (0,1)$.

(2) If however $\delta > \frac{5}{9}$, at $t = 0$, recognised player i will offer $\beta_j\delta_j^2$ if $1 - \beta_j\delta_j^2 > \beta_i\delta_i^2$ meaning $1 - 0.9\delta^2 > 0.9\delta^2 \rightarrow \delta < \frac{\sqrt{5}}{3}$

(3) If however $\delta > \frac{\sqrt{5}}{3} \approx 0.745$, delay of $t = 0,1$ periods results with settlement at $t = 2$

Now consider the case of updating where $\forall\ i: \beta_i^0 = 0.9$. In $t = 1$, the condition for settlement is $1 - \beta_j^2\delta_j > \beta_i^2\delta_i$. At $t = 0$, β_i^2 is unknown, thus $\beta_i^2 = \beta_i^1$ until $t = 1$ after which β_i^2 updates. [162] Therefore, $1 - \beta_j^1\delta_j > \beta_i^1\delta_i$, at $t = 0$, the recognised player i will

[162] Players update their beliefs along the play of game. They can only condition their beliefs on current signals received and not on future signals which have not been received.

offer $\delta_j\left(\beta_j^1(1-\beta_i^1\delta_i)+\left(1-\beta_j^1\right)\left(\beta_j^1\delta_j\right)\right)$ if $1-\delta_j\left(\beta_j^1(1-\beta_i^1\delta_i)+\left(1-\beta_j^1\right)\left(\beta_j^1\delta_j\right)\right)>\delta_i\left(\beta_i^1\left(1-\beta_j^1\delta_j\right)+(1-\beta_i^1)(\beta_i^1\delta_i)\right)$ which holds. If however $1-\beta_j^1\delta_j<\beta_i^1\delta_i$, at $t=0$, the recognised player i will offer $\beta_j^1\delta_j^2$ if $1-\beta_j^1\delta_j^2>\beta_i^1\delta_i^2$. Denote P_{NR}^{t+1}, P_{NN}^{t+1} as respective signals revealed at period t.

Table 4.9 outlines the results at $t=0$ for the cases below:

Table 4.9 – Immediate settlement conditions for $T=3$ game

Case	$PC^{(*)}$	Solution for immediate settlement	Condition for delay
$P_{NR}^1=0.2$, $P_{NN}^1=0.8$,	$If\ 1-\frac{9}{13}\delta>\frac{36}{37}\delta$, $1-\delta\left(\frac{9}{13}\left(1-\frac{36}{37}\delta\right)+\left(1-\frac{9}{13}\right)\left(\frac{9}{13}\delta\right)\right)>\delta\left(\frac{36}{37}\left(1-\frac{9}{13}\delta\right)+\left(1-\frac{36}{37}\right)\left(\frac{36}{37}\delta\right)\right)$	$\delta\in(0,0.601)$	$\delta>0.775$
	$If\ 1-\frac{9}{13}\delta<\frac{36}{37}\delta$, $1-\frac{9}{13}\delta^2>\frac{36}{37}\delta^2$	$\delta\in(0.601,0.775)$	
$P_{NR}^1=0.3$, $P_{NN}^1=0.8$,	$If\ 1-\frac{27}{35}\delta>\frac{63}{65}$, $1-\delta\left(\frac{27}{35}\left(1-\frac{63}{65}\delta\right)+\left(1-\frac{27}{35}\right)\left(\frac{27}{35}\delta\right)\right)>\delta\left(\frac{63}{65}\left(1-\frac{27}{35}\delta\right)+\left(1-\frac{63}{65}\right)\left(\frac{63}{65}\delta\right)\right)$	$\delta\in(0,0.575)$	$\delta>0.758$
	$If\ 1-\frac{27}{35}\delta<\frac{63}{65}\delta$, $1-\frac{27}{35}\delta^2>\frac{63}{65}\delta^2$	$\delta\in(0.575,0.758)$	
$P_{NR}^1=0.3$, $P_{NN}^1=0.7$	If $1-\frac{27}{34}\delta>\frac{21}{22}\delta$, $1-\delta\left(\frac{27}{34}\left(1-\frac{21}{22}\delta\right)+\left(1-\frac{27}{34}\right)\left(\frac{27}{34}\delta\right)\right)>\delta\left(\frac{21}{22}\left(1-\frac{27}{34}\delta\right)+\left(1-\frac{21}{22}\right)\left(\frac{21}{22}\delta\right)\right)$	$\delta\in(0,0.572)$	$\delta>0.756$
	$If\ 1-\frac{27}{34}\delta<\frac{21}{22}\delta$, $1-\frac{27}{34}\delta^2>\frac{21}{22}\delta^2$	$\delta\in(0.572,0.756)$	

$P_{NR}^1 = 0.3$, $P_{NN}^1 = 0.6$	$If\ 1-\frac{9}{11}\delta > \frac{63}{67}\delta$, $1-\delta\left(\frac{9}{11}\left(1-\frac{63}{67}\delta\right)+\left(1-\frac{9}{11}\right)\left(\frac{9}{11}\delta\right)\right) > \delta\left(\frac{63}{67}\left(1-\frac{9}{11}\delta\right)+\left(1-\frac{63}{67}\right)\left(\frac{63}{67}\delta\right)\right)$	$\delta \in (0,0.569)$	$\delta > 0.754$
	$If\ 1-\frac{9}{11}\delta < \frac{63}{67}\delta$, $1-\frac{27}{34}\delta^2 > \frac{21}{22}\delta^2$	$\delta \in (0.569, 0.754)$	

*Participation condition (PC) for recognised player i

The above results for $T = 3$ also show that it is relatively easier to obtain immediate agreement when beliefs evolve compared to the no updating scenario. Nevertheless, it is still possible to derive delay in equilibrium if players are sufficiently patient.

What will be more interesting would be to obtain delay in $t = 0$ and then obtain settlement at $t = 1$ through further revision in beliefs. This is possible. Consider $\delta = 0.8$ and $P_{NR}^1 = 0.2$, $P_{NN}^1 = 0.8$. There will be no agreement at $t = 0$ as $1 - \beta_j^1\delta^2 < \beta_i^1\delta^2$ as shown above in Table 4.9. Consider two cases:

- Suppose same Player i was recognised again at $t = 1$ we derive the updated beliefs of both players as follows: $\beta_j^2 = \frac{\beta_j^1 * P_{NR}^2}{\beta_j^1 * P_{NR}^2 + (1-\beta_j^1) * P_{NN}^2}$, $\beta_i^2 = \frac{\beta_i^1 * P_{RR}^2}{\beta_i^1 * P_{RR}^2 + (1-\beta_i^1) * P_{RN}^2}$. Assume $P_{NR}^2 = 0.1$, $P_{NN}^2 = 0.9$, we find that $1 - \beta_j^2\delta > \beta_i^2\delta$ inducing agreement at $t = 1$. There are other various combinations of $(\delta, P_{NR}^1, P_{NN}^1, P_{NR}^2, P_{NN}^2)$ for which this occurs.[163] This shows that it is possible to derive settlement at $t = 1$ despite having observed delay at $t = 0$ under the case were beliefs evolve. This result contrasts sharply with the no-updating scenario where delay at $t = 0$ leads to delay up until last period $t = T - 1$. For significantly strong signals (for example, $P_{NR}^2 = 0.1$, $P_{NN}^2 = 0.9$ used above) we would get immediate agreement, otherwise delay occurs again.
- On the other hand, suppose Player j is recognised at $t = 1$, for any combination of $\{P_{NR}^2, P_{NN}^2\}$, we get delay at $t = 1$. Note that the respective signals P_{NR}^{t+1}, $P_{NN}^{t+1}P_{RN}^{t+1}$,

[163] A simulation exercise was undertaken using Python to establish this result under various parameter combinations.

P_{RR}^{t+1} are applicable to β_i^{t+1} *and* β_j^{t+1} according to who was recognised for the given t.

Now consider the case for a given T period game and for any given P_{NR}^{t+1}, P_{NN}^{t+1} received at any t:

- When $\delta > \frac{1}{\sqrt[T-1]{\beta_i^1+\beta_j^1}}$ delay occurs at $t = 0$. With $\delta < \frac{1}{\sqrt[T-2]{\beta_i^2+\beta_j^2}}$, settlement occurs at $t = 1$, otherwise delay also occurs at $t = 1$.
- Similarly, with $\delta < \frac{1}{\sqrt[T-3]{\beta_i^3+\beta_j^3}}$, settlement occurs at $t = 2$, otherwise delay occurs at $t = 2$

Therefore for any given period $t = k - 1$, if $\delta < \frac{1}{\sqrt[T-k]{\beta_i^k+\beta_j^k}}$, settlement occurs at $t = k - 1$, otherwise delay occurs at $t = k - 1$ where $k \in [1, T - 1]$

Summary of Example 5:

There are a number of additional factors that determine whether agreement occurs sooner or later under evolving beliefs: (1) Frequency of a given player being recognised consecutively and (2) Strength of signal. The following considers the impact on settlement from different signals:

- Strong signal: When P_{NN} is high and/or P_{NR} is low, this is a strong signal as it puts the recognised player in a stronger bargaining position and unrecognised player in a weaker bargaining position. Therefore, it is easier for settlement to occur.
- Weak signal: When P_{NN} is low and/or P_{NR} is high, subject to $P_{NR} \leq P_{NN}$, this is a weak signal as it puts the recognised player in a weaker bargaining position and unrecognised player in a stronger bargaining position, relative to the strong signal scenario. Therefore, it is harder for settlement to occur.

4.11.8 Conclusion

This section has shown that the Yildiz (2003) exposition of heterogeneous beliefs with immediate settlement can be extended to various settings, consisting of different degrees of excessive optimism, discount rates and evolving beliefs. Under these settings, delay may occur in equilibrium. The model presented, when applied to sovereign debt restructuring negotiations, produces some interesting results: for example, highly patient players may prefer to delay negotiations when signals of future bargaining power are weak

Chapter 5

5. Good faith in sovereign debt restructuring

5.1. Negotiating a write-down with heterogeneous creditors under good faith

5.1.1. Introduction

There is a general consensus that the implied obligation of good faith prohibits subordinating conduct. This is recognised by several common-law cases and analysis.[164] Furthermore, economic literature on good faith posits that the norm could potentially smoothen debt workouts, address incompleteness of contracts, opportunism and other incentivisation problems, thereby enhance efficiency and equitable outcomes.[165] Nevertheless, neither courts nor commentators have articulated a clear formal operational standard of good faith, consequently leaving courts with wide discretion in determining conduct that violates the implied duty.

Despite the lack of a clear set of principles underpinning good faith, the recognition of the norm expands across several policy domains concerned with reforming current frameworks for sovereign debt restructuring. To name a few: The IMF Policy on Lending into Arrears (LIA) to Private Creditors[166], the IIF Principles for Stable Capital Flows and Fair Debt Restructuring[167]; the UNCTAD Principles of Responsible Sovereign Lending & Borrowing and its proposal on Basic Principles on Sovereign Debt Restructuring Processes[168]; the Sovereign Debt Restructuring Mechanism[169]. For instance, the IMF LIA policy permits lending provided, inter alia, that the debtor is negotiating in good faith on a debt restructuring with its creditors, regardless of the degree of creditor heterogeneity. However, IMF

[164] For more discussion, see section 5.2.2
[165] For more details, see economic literature discussed in section 5.2.3.
[166] (International Monetary Fund, 1999), (International Monetary Fund, 2002).
[167] (Institute of International Finance, 2013)
[168] (UNCTAD, 2012a), (UNCTAD, 2012b), (UNCTAD, 2014), (UNCTAD, 2015a); (UNCTAD, 2015b).
[169] (Krueger, 2001)

acknowledges the vagueness in its own definition of the duty.[170] Likewise, the IIF reports that 'it is very difficult to come to a precise definition of "good faith" and is 'neither wise nor practical to seek an exhaustive set of criteria to evaluate this principle'.[171]

Professor Summers also recognises this difficulty and has rather suggested an open-ended approach.[172] He claims that good faith is best understood by what it excludes, which are a set of contextually recognised forms of bad faith conduct.[173] Mackaay (2012) argues likewise, that the good faith doctrine should be defined according to an 'open-ended arsenal of responses' to opportunism/bad faith as this may take an infinite number of forms and may be difficult to assess.

Nevertheless, the White Hawthorne v Argentina[174] dispute provides a starting point to study good faith in sovereign debt restructuring. The court opinion seems to suggest that the violation of the pari passu clause is inconsistent with the debtor's duty to negotiate in good faith. This leaves us with some research questions: What is good faith in sovereign debt restructuring? Can the summer's excluder analysis be applied to explain good faith? If so, what is bad faith? How do we rationalise the violation of the pari passu clause as indicated in the court decisions ensuing disputes of NML and White Hawthrone against Argentina? To conceptualise good faith, how is the bargaining context modelled with/without the violation of pari passu clause? What are the efficiency and distributional implications of such good faith obligation in sovereign debt restructuring? This are questions we hope to answer in this paper.

5.1.1.1. Good faith definition

We define good faith according to Summer's excluder analysis which means not acting in bad faith. The good faith conduct is a commitment not to violate the court interpretation of the pari passu clause proceeding from the NML vs Argentina 2013 decision.[175] In the White

[170] (International Monetary Fund, 2013)
[171] See supra note 167
[172] (Summers, 1982); (Summers, 1968)
[173] Summers argues that "good faith" is a phrase without but serves solely to exclude "a wide range of heterogeneous forms of bad faith. His use of the phrase appears intended only to rule out precise forms of bad faith conduct in given circumstances. See (Summers, 1968) at 201.
[174] *White Hawthorne, LLC, et al v The Republic of Argentina* (16-cv-1042 (TPG), Opinion dated 22 December 2016) (The '2016 Opinion')
[175] *NML Capital, Ltd v Argentina*, 727 F3d 237 (2d Cir 2013) (The '2013 Decision'). The Second Circuit's 2013 decision states that "As we have held, by defaulting on the [plaintiffs'] Bonds, enacting legislation specifically forbidding future payment on them, and continuing to pay interest on subsequently issued debt, Argentina breached its promise of equal treatment".

Hawthorne vs Argentina dispute, Judge Griesa's Opinion clearly stated the combination of conduct that violates the pari passu clause, which were the following: (1) failure to make scheduled payments on holdout debt, (2) legislative enactments (lock law) and (3) executive declarations of indefinite default on non-tendered bonds.[176] The 2016 Opinion also inferred the combination of conduct that constituted non-violation of the pari passu clause, which were the following: (1) declarations to resolve disputes, (2) repealing legislative enactments (lock law) and perhaps (3) acknowledgments by the wider community, ministerial bodies and appointed officers recognising "good faith efforts" in resolving the debt disputes.[177] Thus we conclude that the combination of Argentina's conduct in dealing with the NML holdouts violates the pari passu clause, consistent with bad faith behaviour, and thus – according to Summers excluder theory – is in violation of good faith. As the court did not state what conduct holds more significance in violating the clause – neither did it specify the exact combination of conduct – we therefore allow in our model each conduct to have an equal weighing in triggering the breach.

5.1.1.2. Ghosal and Miller (2016) Model: Lock law vs Good faith

We revisit the Ghosal and Miller (2016) model of heterogeneous creditors. In a framework that allows the passage of a lock law, they examine a bargaining game with two creditor types (impatient and patient) and incomplete information where creditors know their types but debtor does not know respective creditors' types. They derive a perfect Bayesian equilibrium (PBE) with delay where an enacted lock law sufficiently tempts the impatient creditor to an immediate settlement with the debtor while the patient creditor delays settlement till after the lock law expires in order to receive a more generous settlement. In our current paper on good faith, we relax Ghosal and Miller's model by imposing the court interpretation of the pari passu clause on the debtor's bargaining behaviour. We design a PBE consistent with the debtor's commitment to the court mandate and associate such commitment with fulfilment of the good faith debtor duty in sovereign debt restructuring.

5.1.2. Model

Consider a sovereign debtor negotiating with two private creditors, one patient and the other impatient. The debtor, denoted by D, has a discount rate $\delta_D > 0$ with discount factor $e^{-\delta_D \Delta t}$. The game is represented in a discrete time setting of $0, \Delta, 2\Delta, 3\Delta, \ldots, t\Delta, \ldots$ where $\Delta > 0$. Δt is the time difference between two successive periods and is assumed to be negligible. Offers

[176] Supra note 174 at 5. Judge Griesa held that violation of one conduct, such as non-payment of defaulted debt, was insufficient to show the breach of pari passu clause.
[177] Supra note 174 at 6

are also made at discrete points in time. The creditors, denoted by X for the impatient/exchange-bondholder type creditor and by H for the patient/holdout type creditor, are differentiated by discount rates $0 < \delta_H < \delta_X$ and thus discount factors $e^{-\delta_H \Delta t} > e^{-\delta_X \Delta t}$ respectively. It is assumed that each creditor knows its own discount rate. The debtor is informed of the different discount rates but does not know who is which. At each t, the creditors must decide whether to settle or not (i.e. whether to enter bargaining or not). If both agree to settle, one of the two will be chosen with equal probability to bargain with the debtor. Following a decision to settle, the debtor and the creditor bargain according to the alternating offers Rubinstein bargaining game. The creditor exist the process once an agreement has been reached receiving a settlement according to that agreed. For convenience, the bargaining pie (the potential gains from restoring the debtor's access to capital markets) is taken to be constant and normalised to one.

Through the debtor's commitment to act in good faith, the debtor is prohibited from taking actions that constitute bad faith. An action, consisting of a combination of conduct as highlighted, violates the pari passu clause and thus is bad faith. We examine whether commitment to good faith conduct can eliminate inefficient delays in debt restructuring. Let us conceptualize the debtor's negotiating behaviour in violation of the pari passu clause. We look at the offending debtor conducts stated in the 2013 decision and conceptualise them in turn. Firstly, *remaining in default on plaintiffs bonds whilst servicing subsequently issued debt* would entail making a restructuring offer to impatient type creditors with them accepting the offer, while the patient type creditors rejects such offer and remains in default until the next round of bargaining where the debtor and patient-type creditor may engage in negotiations. Secondly, *enacting legislation (lock law) and making executive declarations specifically forbidding future payment on plaintiffs bonds* would entail banning any enhanced settlement terms to the patient-type creditor for a certain number of periods, as stated in Ghosal and Miller (2016). Thus, good faith conduct in this model would consist of the following:

- the proposal of identical offers[178] (as part of the rules of the game) that both creditor types accept[179] (derived in equilibrium) and

[178] Here, debtor would have to make identical offers since, in this model, both creditor types hold identical debt claims. The only differentiating characteristic between the two creditor types are their discount rates.

[179] Though the debtor can only bargain with one creditor at a time, an offer made with the bargained creditor who accepts becomes binding on the other creditor (which in the proposed pooling equilibrium also would have accepted that offer if he was chosen to bargain with debtor).

- the prohibition of a law that permits different offers to one creditor type vis-à-vis the other after a certain length of time.[180]

Consequently, the combination of conduct (1) and (2) is consistent with the promise of equal treatment (i.e. pari passu clause).

Now that we have defined what good faith is in terms of debtor bargaining behaviour, let us now turn to the equilibrium solutions. All our results are stated for the case when Δt is negligibly small at the continuous time limit as $\Delta t \to 0$.

5.1.3. Equilibrium solutions

We focus on Perfect Bayesian Equilibria where strategies and beliefs are configured so that:

(i) The debtor, impatient type creditor and patient type choose to settle immediately and the debtor makes a pooled offer s_p for which both creditor types accept immediately.

(ii) Denote the probabilities of being an impatient type by $\rho_x \in (0,1)$ and the probability of being a patient type by $\rho_H = 1 - \rho_x$. Let the posterior belief $pr(X|A)$ (resp. $pr(H|A)$) be the debtors belief that the settling creditor at t is the impatient (resp. patient) type. Similarly, let the posterior belief $pr(X|R)$ (resp. $pr(H|R)$) be the debtors belief that the non-settling creditor at t is the impatient (resp. patient) type. A and R denote accepting and rejecting respectively. Thus the debtors posteriors are as follows:

a. Conditional on both creditor types settling at $t = 0$, with probability $pr(X|A) = \rho_x$, the creditor is an impatient type creditor and with probability $pr(H|A) = 1 - \rho_x$, the creditor is a patient type creditor.

b. Conditional on one creditor type settling and the other type not settling at $t = 0$, with probability $pr(H|R) = 1$, the non-settling creditor is a patient type.[181] Thus and $pr(X|R) = 0$. Due to the obligation to the good faith requirement,

[180] *Prohibition of a lock law* means the debtor is free to make separating offers to the different creditor types irrespective of the time elapsed between accepted proposals. For example, with the prohibition of a lock law, the debtor is allowed to be in default with Holdout-type for one/two periods (and not T periods as stated in the lock law) while paying the exchange bondholder. Notwithstanding, the Prohibition of a lock law permits making identical offers to both types at the same time. The other conduct *disallowing default with one type whilst servicing another* rules out the possibility altogether of making separating offers at different times. Commitment to the pari passu clause means making identical offers at same time to both types (of which they must accept) or making separating offers at the same time (if debtor could separate out the types). As the model assumes that the debtor can only bargain with one type at a time and does not know which type he is bargaining with, the only possible conduct that satisfies the clause is making identical offers which both type must accept. We show that the resulting equilibrium strategy is this (i.e. identical offers which both type must accept) with immediate agreement when the debtor attempts to fulfil the pari passu clause.

[181] Here the consistence condition does not restrict the debtor's (out-of-equilibrium) belief as a creditors choice to reject an equilibrium offer is a zero-probability event. We set the out-of-equilibrium belief as stated to support the PBE.

the debtor is restricted to proposing the same offer and thus he proposes s_p for $\forall t \geq 1$.[182]

c. Conditional on both creditors not settling at $t = 0$, posterior beliefs remains the same as priors i.e. probability $pr(X|R) = \rho_x$ and $pr(H|R) = 1 - \rho_x$. Debtor offers s_p for $\forall\ t\ \geq 1$ in such conditions.

Proof:

Consider the complete information bargaining game between the debtor and a creditor (type unknown to the debtor). The debtor must anticipate a reduction of the bargaining surplus when bargaining with one creditor by virtue of the pari passu condition requiring the debtor to make identical offers. At the continuous time limit, there will be immediate agreement with any creditor where the pooled share[183] is

$$s_p = \frac{\delta_D}{\delta_D + \rho_x\delta_x + (1-\rho_x)\delta_H}(1 - s_p) \tag{5.1}$$

Simplifying (5.1) we get

$$s_p = \frac{\delta_D}{2\delta_D + \rho_x\delta_x + (1-\rho_x)\delta_H} \tag{5.2}$$

Thus the debtor share is

$$s_D = 1 - 2s_p \tag{5.3}$$

We now need to consider the relevant participation conditions.

Scenario 1: Suppose both types choose to not to settle $t = 0$. They will both be made the same offer s_p. Due to the time cost of delay, each player is worse off from not-settling.

Scenario 2: Suppose only one type settles at $t = 0$. In $t = 1$, the non-settling creditor is made the same offer s_p. Due to the time cost of delay, the non-settling creditor is worse off from not-settling.

[182] Since the debtor is forced to treat both creditors alike according to the pari passu clause, he will propose the same offer made to an earlier settling creditor to any one creditor who decides to go off-the-equilibrium path of play. Thus by the results of the game, we have ruled out the possibility of a separating equilibrium where the debtor makes different offers. Pari passu condition clearly restricts the bargaining range of offers.

[183] We use the subgame perfect equilibrium from the alternating bargaining game result shown in Corollary 3.1 in (Muthoo, 1999, p. 46) for $\Delta > 0$ but small and use a weighted average of the different types discount rates.

Under the two scenarios, both types are clearly worse off from not-settling at $t = 0$ as the following inequalities hold:

For the impatient type:

$$(s_p)e^{-\delta_X \Delta} \leq s_p \tag{5.4}$$

For the patient type:

$$(s_p)e^{-\delta_H \Delta} \leq s_p \tag{5.5}$$

For any $\delta_i > 0$ where $i \in \{X, H\}$ and $\Delta > 0$ but negligibly small, the two creditor types strictly prefer to settle immediately. In addition, the debtor obtains a higher share of the bargaining surplus from immediate settlement as his participation constraint holds, that is

$$1 - 2s_p \geq e^{-\delta_D \Delta}(1 - 2s_p) \tag{5.6}$$

Thus there exists a unique pure strategy pooling equilibrium where settlement between creditor types and the debtor happens immediately.[184]

Q.E.D.

5.1.4. Comparative statics

s_p is decreasing in both creditor types discount rates but increasing in the debtor's discount rate. It is also decreasing in the debtor's prior belief of an impatient type creditor.

Proof:

$$\frac{\partial s_p}{\partial \delta_H} = -\frac{\delta_D(1 - p_X)}{(2\delta_D + \rho_x\delta_x + (1 - \rho_x)\delta_H)^2} < 0 \tag{5.7}$$

$$\frac{\partial s_p}{\partial \delta_X} = -\frac{\delta_D p_X}{(2\delta_D + \rho_x\delta_x + (1 - \rho_x)\delta_H)^2} < 0 \tag{5.8}$$

$$\frac{\partial s_p}{\partial \delta_D} = \frac{\rho_x\delta_x + (1 - \rho_x)\delta_H}{(2\delta_D + \rho_x\delta_x + (1 - \rho_x)\delta_H)^2} > 0 \tag{5.9}$$

$$\frac{\partial s_p}{\partial \rho_x} = -\frac{\delta_D(\delta_X - \delta_H)}{\left(2\delta_D + \delta_H + \rho_x(\delta_X - \delta_H)\right)^2} < 0 \tag{5.10}$$

[184] Any observed delay in this model would be trivial delay where, by construction of the model assumption that the debtor can only bargain with one creditor at a time, remaining creditor is settled at the next period.

As both creditor types are becoming more patient, the equilibrium pooling offer made by the debtor must increase in order to make creditors indifferent between accepting and rejecting offers in the alternative bargaining game. As expected, as the debtor becomes more patient, ceteris paribus, the pooled offer made decreases. Finally, as the debtor's prior belief of an impatient type creditor increases, the pooled offer made decreases. This is expected as $\delta_X > \delta_H$. Now we look at the distribution implications of the good faith duty requirement.

5.1.5. Efficiency and distributional implications

We have shown that the good faith duty, that is fulfilment of the pari passu clause, eliminates inefficient delay in bargaining. However, distributional implications remain. Let us take the separating equilibrium offers derived under the Ghosal and Miller (2016) paper consistent with the lock law and thus bad faith conduct.

The patient creditor offer s_H received after $t = T$ periods under the lock law is

$$s_H = \frac{\delta_D \delta_x}{\delta_D(\delta_x + \delta_H) + \delta_x \delta_H}$$

The impatient creditor offer s_X received from immediate settlement at $t = 0$

$$s_X = \frac{\delta_D \delta_H}{\delta_D(\delta_x + \delta_H) + \delta_x \delta_H}$$

Note that $s_H > s_P > s_X$

Comparing the discounted payoffs, we have that:

Impatient creditor type is better off under the pooling equilibrium

$$s_P > s_X \ \ as$$

$$\frac{\delta_D}{2\delta_D + \rho_x \delta_x + (1 - \rho_x)\delta_H} > \frac{\delta_D \delta_H}{\delta_D(\delta_x + \delta_H) + \delta_x \delta_H}$$

$$\text{which solves to } \left(\delta_D + \frac{\delta_H}{2}\right)(\delta_X - \delta_H) > 0$$

To assess whether the patient creditor and the debtor are better or worse off under the pooling equilibrium, we conduct the calibration exercise below. The patient creditor is better off when $s_P > e^{-\delta_H T\Delta} s_H$, while the debtor is worse off when $1 - 2s_P < e^{-\delta_D T\Delta}(1 - s_X - s_H)$

5.1.6. Calibration

Let us conduct a simple calibration of our results above. Similar to Ghosal and Miller, we set $\delta_D = \delta_X = 5\%$, We start with $\delta_H = 5\%$ and then decrease the discount rate of the holdout creditor, thereby increasing the degree of creditor heterogeneity. Let $p_X = 0.5$ and $\Delta = 1$. Let T be the second-best delay time represented in Ghosal and Miller as $\widehat{T}$.Thus for simplicity, we assume players coordinate to the second-best benchmark.

Illustrated below, Table 5.1 shows that the impatient creditor (exchange bondholder) is always better off with a pooled offer than with a separating offer and moreover, his relative gain from the pooling equilibrium increases exponentially as the holdout creditor becomes increasingly patient. This can also be shown through the dotted line in Figure 5.1. The intuition is this: as the holdout creditor becomes more patient, the debtor has to propose a higher offer to make the holdout indifferent between accepting and rejecting, and since the both creditor types receive same offer in equilibrium, the impatient creditor is made better off.

An interesting case is the holdout creditor's relative payoff function: Table 5.1 shows that with sufficiently low creditor heterogeneity (more specifically where the discount rate of the holdout higher than 2.3%), he makes a payoff gain from the pooled offer, but under high degrees of creditor heterogeneity (lower than 2.3%), he makes a payoff loss from the pooled offer. Moreover, his relative payoff function is non-monotonic in his discount rate: Figure 5.1 shows that for discount rates above 3.5%, there is a logarithmic increase in his relative payoff as his discount rate decreases, but for discount rates below 3.5% there is an exponential decrease in his relative payoff as his discount rate decreases. The intuition is this: the holdout type would rather prefer the pooled offer over the separating offer to avoid the costs of delay when he is not substantially different from the exchange bondholder type. In fact under a sufficiently low degree of creditor heterogeneity, he receives an increasing payoff from being more patience since the pooled offer compensates, more relative to the separating offer, with low levels of heterogeneity. However under high degrees of creditor heterogeneity, he would prefer the separating offer over the pooled offer even at the expense of delay as the separating offer is more compensating for his much higher level of patience. Here, he is increasingly worse off from not being able to later exploit the gains from a separating offer.

Table 5.1 - Calibration of the creditors' and debtor's discounted payoff

	Ghosal and Miller (2016) – Lock law model						*Good faith model*		*Relative Payoff from good faith*		
δ_H	$\widehat{T}$	s_X	s_H	$e^{-\delta_H \widehat{T}\Delta} s_H$	s_D	$e^{-\delta_D \widehat{T}\Delta}(1 - s_X - s_H)$	s_p	s_D	**Exchange**	**Holdout**	**Debtor**
5.0%	0.0	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.00	0.00
4.5%	2.1	0.32	0.36	0.32	0.32	0.29	0.34	0.32	0.02	0.01	0.03
4.0%	4.5	0.31	0.38	0.32	0.31	0.25	0.34	0.31	0.04	0.02	0.06
3.5%	7.1	0.29	0.42	0.32	0.29	0.20	0.35	0.30	0.06	0.03	0.09
3.0%	10.2	0.27	0.45	0.33	0.27	0.16	0.36	0.29	0.08	0.02	0.12
2.5%	13.9	0.25	0.50	0.35	0.25	0.13	0.36	0.27	0.11	0.01	0.15
2.0%	18.3	0.22	0.56	0.39	0.22	0.09	0.37	0.26	0.15	-0.01	0.17
1.5%	24.1	0.19	0.63	0.44	0.19	0.06	0.38	0.25	0.19	-0.06	0.19
1.0%	32.2	0.14	0.71	0.52	0.14	0.03	0.38	0.23	0.24	-0.13	0.20
0.5%	46.1	0.08	0.83	0.66	0.08	0.01	0.39	0.22	0.31	-0.27	0.21

Figure 5.1 – Relative payoff functions under good faith vis-à-vis lock law with varying degrees of patience on the Holdout type

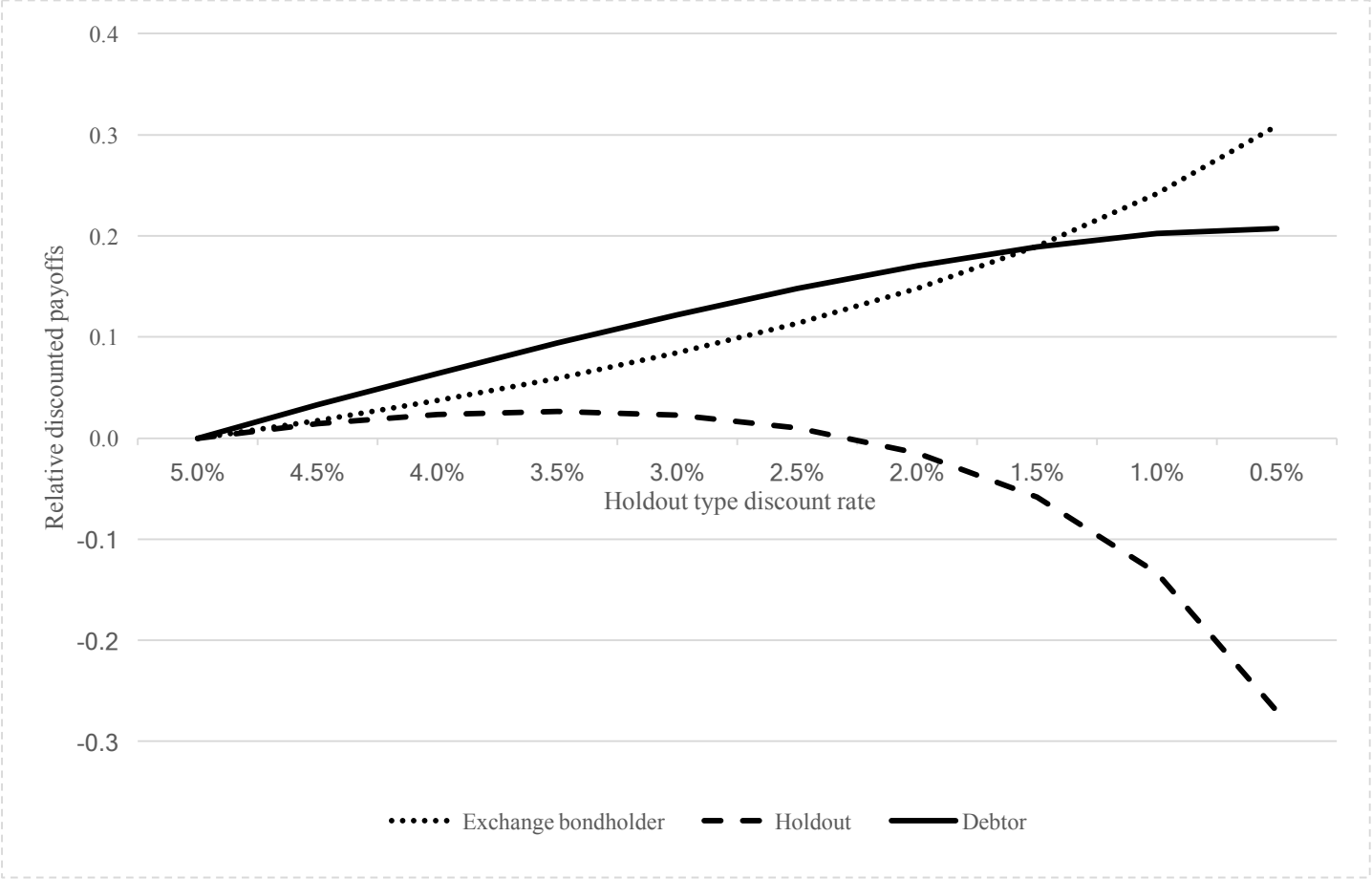


Figure 5.1 is a simple graphical representation of Table 5.1 showing the parties' payoff gain/loss from the good faith obligation.

The debtor exhibits a concave relative payoff function where his payoff logarithmically increases as the holdout becomes more patient. The intuition is this: Offering a pooled offer to both types means he saves on the cost of making separating offers (including the cost of delay and the cost of compensating high levels of patience). Also, graphically we can see that his relative payoff tails off with very high creditor heterogeneity. The intuition is: though the debtor would always strictly prefer the good faith equilibrium to that of the lock law, it comes a time where – with very high level of patience by the holdout – the debtor is not any more better off under good faith as his required to compensate the very high rate of patience with the pooled offer (as he does with the separating offer).

An additional insight we draw from the analysis is that good faith produces Pareto improving settlement outcomes, provided the holdout is not too patient. The intuition for this follows: Since delay is costly and the debtor's commitment to good faith means that he must make the same offer to both types of creditors at any given round, a low patient holdout (with discount rate close to that of exchange bondholder) will prefer a prompt settlement and in so doing avoid the costs of delay. Thus, as the good faith solution is always profitable for the exchange bondholder and the debtor, we have a pareto improvement outcome where all parties gain by avoiding the time cost of delay. However, a high patient holdout (with discount rate far from that of exchange bondholder) will be worse off under the good faith commitment as he would have otherwise gained from waiting and receiving a higher offer permitted by the Lock Law. Thus, with a highly patient holdout we fail to obtain a Pareto improvement outcome as not everyone gains from the good faith commitment.[185]

5.1.7. Other considerations

Here we offer a brief narrative that considers the effects of excusable default and creditor good faith on our analysis.

5.1.7.1. Excusable sovereign default

There has been much study and evidence to suggest that sovereigns sometimes excusably default. For some references, see Grossman and Van Huyck (1988), Kiyotaki and Moore (1997), Guimaraes (2011), Kuttner (2013), Buchheit et al. (2013). Guimaraes (2011) shows

[185] In summary, delaying – in the hope for a higher offer which the Lock Law provides – is not worth it to the low patient holdout when he is quite similar to the exchange bondholder, but it is certainly worth it when he is substantially different from the exchange bondholder. From Table 5.1, we can see that with holdout discount rate as low as 0.5%, his payoff under the Lock Law is 0.66, which is much higher than the 0.39 payoff he receives under good faith.

that the increase in the US interest rate in the 1980's, being the main driver of the Latin American debt crisis, led to the eventual debt relief of 30% for most of the region's major economies.[186] This is an example of an excusable sovereign default precipitated by external shocks. It is also consistent with our good faith analysis in this chapter which shows that, with sufficiently high levels of creditor heterogeneity, the debtor obtains 20% more debt relief under good faith conduct than under bad faith. Thus, we could perceive an excusable default as the debtor having defaulted in good faith.

Chapter 5.2 highlights that an assessment of good faith debtor conduct under the IMF LIA policy requires the sharing of information about the causes of default (see section 5.2.4.6) and as such provides the opportunity for assessing whether default could be excused or not. In our alternative proposal made in section 5.2.5.3, we propose that the courts defer to the good faith and fair dealing market norms, also informed by the IMF LIA and IIF policy assessments, when the debtor seems to be negotiating in good faith with its creditors. Thus, we propose that the courts recognise policy assessments made of the debtor's conduct in relation to the causes of the default when deciding to abstain from ongoing negotiations or intervene through court injunctions. If the debtor defaulted excusably as well as negotiating with its creditors in good faith, then the courts should abstain. Such good faith efforts will result to immediate agreement with debt relief, as per our analysis in this chapter. However, if the debtor inexcusably defaulted and is not negotiation with its creditors in good faith (according to market expectations), then the courts should grant injunctions pursuant to litigants demands. Such bad faith conduct will result in expensive delays, as per our analysis in this chapter.

5.1.7.2. Good faith creditor conduct

Across the policy domain, good faith creditor conduct is expected in debt restructuring negotiations. For example, within the IMF LIA policy, creditors are required to agree to a standstill of payments and a stay on litigation during negotiations. UNCTAD (2015a), recognising the duty as mutual between both parties, states that the norm requires "only legitimate expectations be afforded legal protection". In particular, it mentions that abusive creditor holdouts, who purchased such claims or sued with the intention to extract a preferential treatment, should be incompatible with the good faith principle. This is more pronounced for those who purchased the distressed debt containing unanimity clauses. Due to the collapse of the Champerty defence, the court could fail to grant creditor remedies of

[186] Argentina, Brazil, Mexico, Uruguay received debt relief of around 30%. However, Venezuela received 20%.

money judgement when litigants have undertaken such abusive strategies. This will mean that the court will abstain when it observes bad faith conduct by the creditor but good faith conduct by the debtor. Where this is the rule of the game, we could observe immediate settlement as creditor cannot receive a higher offer in later rounds of bargaining. However, the courts will intervene when it observes bad faith debtor conduct and good faith creditor conduct. Here, we could observe delays in restructuring as the debtor will have to make higher offers in later bargaining rounds following court orders.

Another criterion for assessing creditor bad faith could be a situation where the creditor purchases a blocking minority of a bond issue at near sovereign default and holds out for a better deal. Here, the creditor could hold out for a deal that would have otherwise been excluded by aggregated CACs'. Like above, the court could interpret such action as bad faith creditor conduct and act accordingly. Then creditors, knowing that such is the court's template, will settle immediately as explained above.

5.1.8. Conclusion

The good faith debtor duty is fulfilled by the non-violation of the pari passu clause. According to the pari passu clause, the debtor cannot be in default with one private creditor while serving another where both creditors hold identical claims. Using the Ghosal and Miller (2016) framework and extending it to allow for the obligatory commitment to the pari passu clause, we show that *in equilibrium* the debtor will make an offer at the beginning of the game that both types accept immediately. Though efficiency conditions are enhanced in that there is no delay with good faith, distributional implications remain. Compared to Ghosal and Miller's results, the impatient creditor and the debtor are always better off with the pooled offer, while the patient creditor is only better off with low levels of heterogeneity and worse off otherwise.

5.2. The Enforcement of a Duty to Negotiate in Sovereign Debt Litigation[187]

5.2.1. Introduction – *The NML Legacy*

"If, in a galaxy not too far away, sovereign debt workouts are to have any chance of an orderly completion, a method must be found to neutralize this new weapon [of enforcement]."

(Buchheit and Gulati, 2017, p. 224)

In sovereign debt litigation, it is difficult to overstate the significance of the NML litigation against the Republic of Argentina.[188] To overcome the problem of weak enforcement- a structural flaw in sovereign debt markets - a US court interpreted a boilerplate provision in the way that now makes it possible to give one set of creditor's access to payment streams flowing to another. It was widely argued that the judicial interpretation disrupted historically established market practice.[189] This was backed by evidence of subsequent attempts to disavow what was viewed as 'an aberrant judicial interpretation'.[190] The 'market did not in fact understand the clause to mean what the judiciary said the market understood the clause to mean'.[191] From the perspective of the common law, the courts recourse to equity powers to injunct third party payment streams rather than issue money judgements to compensate claimants for breach of contract was incoherent. Further, the current direct impact of enforcement in US law on third party claims is clearly unjust. However the courts hands were tied. The standard contractual remedies which would otherwise include a right to compensation for breach would also hit the structural constraint when it came to attachment. The clear legacy of the NML decision was that it went against reasonable expectations of

[187] Some of the materials of this chapter appears published in Thomas D., Obi C. (2018), "Managing the NML legacy: Is it time to imply a common law good faith duty to negotiate in sovereign debt litigation?", Adam Smith Business School, University of Glasgow.

[188] See (Buchheit and Gulati, 2017); (Gelpern, 2016); *NML Capital, Ltd. v. Republic of Argentina*, 699 F.3d 259, 260 (2d Cir. 2012) and *NML Capital Ltd. v. Republic of Argentina*, No. 08-cv-6978 (S.D.N.Y. Dec. 7, 2011)

[189] Id

[190] See (International Capital Market Association, 2014, Annex) listing sovereign debtors that adopted the revised pari passu clauses during the period from 1 October 2014 to 30 October 2016); See also (Choi et al., 2016) reporting data on the revisions to pari passu clauses between 1 June 2011 and 30 May 2016.

[191] Id

commercial parties and detracted from rather than enhanced commercial certainty. More specifically, non-ratable payments – an established market practice – are now subject to judicial oversight. This paper examines the possibility of a doctrinal threshold that restricts judicial intervention to situations in which there is clear evidence of a failure of good faith duty to negotiate.

5.2.1.1. Historical recognition of Good faith in Sovereign debt

There is significant historical evidence to suggest that voluntary debt restructurings rely on an implicit market norm of good faith that facilitates cooperation.[192] Historical evidence also indicates that sovereigns rarely strategically default.[193] By refusing to negotiate or acknowledge holdout claims Argentina can be seen as an outlier to this general historical trend. However, the official mechanisms in place to contain the consequences of opportunistic behaviour are fracturing.[194] In an important sense, the NML legacy is also a function of the fundamental disruptions and transitions in official sector involvement facilitating sovereign debt workouts. Moreover, the IMF had no role to play in the eventual resolution of the Argentina's repayment crisis.[195] Though the factors that have facilitated consensual debt workouts such as creditor committees, long term relationships between commercial banks and debtor governments, the 'take it or leave it' offers made by sovereigns have changed overtime, there are identifiable trends that persist in the modern period of sovereign lending suggesting that mutual efforts are required by both parties to reach settlements, thus implying the good faith norm in sovereign debt contracts (Sturzenegger and Zettlemeyer, 2007).

Figure 5.5 in the appendix provides a timeline of selected commercial court cases linked with the good faith duty. The figure shows that the implied duty has been historically recognised both under the common law and as a market norm. The next two sub-sections

[192] The historical evidence indicates that 'the great majority of defaults in the nineteenth and twentieth century eventually led to some form of settlement between creditors and the debtor country' implying the exercise of an implicit good faith norm in sovereign debt contracts. Following debt defaults, sovereigns usually engage creditors in debt negotiations and settlements were reached with the acceptance by supermajorities of creditors (80-90 percent) as specified in the offers. In most cases during this period, debt renegotiations are completed within a matter of months and creditor holdouts were not a significant problem. See (Sturzenegger and Zettelmeyer, 2007).

[193] In Buckley's view, there is good evidence to suggest that default is not in the interest of domestic elites. See (Buckley, 2005).

[194] See (Gelpern, 2016).

[195] In many ways the markets are responding to these shifts, one change is the recent establishment of the sovereign credit default swap market where market actors can buy insurance to protect themselves from opportunistic behaviour. See (Gulati and Choi, 2006).

briefly looks at the interplay between key court decisions from lawsuits against Argentina within the sphere of the unique contracting environment of sovereign debt.

5.2.1.2. Unique contracting environment of Sovereign debt

Sovereign debt workouts settle in the unique contracting environment defined by a balance between weak enforcement [196] and the absence of statutory, sovereign bankruptcy protections[197]. The adoption by creditor states, first the US (and later the UK) of restricted sovereign immunity regimes, released commercial sovereign assets for attachment. [198] This arguably led to a rise in creditor litigation[199]. Sovereigns responded to this regime by immunising their assets from attachment. This led to a decline in creditor power,[200] which was counterbalanced by creditor's resistance to any form of sovereign bankruptcy protections. [201] This restored balance encouraged creditors and debtors to come to the negotiating table as options for recovery from the crisis for the debtor and from non-payment for creditors were limited.[202] During this time, by and large the courts remained at the margins of debt workouts. That is until *NML*.[203]

Because sovereign debt litigation occurs in a non-standard contracting context between sophisticated parties that do not hold unequal bargaining positions, the possibility of judicial intervention and the exercise of discretion outside the framework of organising principles, which state in general terms the requirements of justice, becomes real. This motivates our current examination. Our paper examines whether good faith is one such general organising principle that can be drawn upon to articulate a doctrinal threshold to limit enforcement through the NML route to specific situations discussed below. This is explored as one way to manage the NML legacy.

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[196] Even though plaintiff-creditors obtain summary judgements, it remains difficult to enforce those judgments in light of the scarcity of attachable assets outside of the debtor's jurisdiction.

[197] Many proposals have been made for sovereign bankruptcy regimes but have received insufficient market interest from leading creditor countries – For details on bankruptcy proposals, see (Buchheit et al., 2013).

[198] Foreign Sovereign Immunities Act (FSIA) in the US, and the State Immunity Act of 1978 (SIA) in the UK. After adoption of a restrictive immunity regime, a foreign sovereign could be sued for its commercial activities albeit the boundaries of "commercial" activity were contested. See (Weidemaier and Gulati, 2016)

[199] See (Fisch and Gentile, 2004), (Schumacher et al., 2015)

[200] See (Lastra and Buchheit, 2015)

[201] See *Allied Bank International v. Banco Credito Agricola de Cartago*, 757 F.2d 516, Second Circuit (1985) (act of state doctrine defence was no longer applicable). Also see Buchheit et al. (2013) for details on attempts and obstacles to introduce bankruptcy proceedings.

[202] See (Gelpern, 2016) on the fracturing overarching political economy that sustained debt workouts.

[203] See *NML Capital, Ltd. v. Republic of Argentina*, 699 F.3d 259, 260 (2d Cir. 2012) and *NML Capital Ltd. v. Republic of Argentina*, No. 08-cv-6978 (S.D.N.Y. Dec. 7, 2011)

5.2.1.3. Key court decisions under Argentina's sovereign debt dispute

The NML ruling[204] shifted this balance by giving creditors a legal right to attach payments to third party creditors without any countervailing enhancement in debtor protection. This skewed balance opens up the possibility of opportunistic behaviour otherwise confined to a set of aggressively litigant sub-set of creditors.[205] The '*NML route*' entails the court's exercise judicial intervention requiring ratable payments that attaches the payment streams to third-party creditors. This route dis-incentivises creditor participation, potentially delaying settlements and eventually increasing costs of negotiations. Interested parties would now need to take steps to protect themselves from this behaviour and the courts are now positioned to play a critical role in debt settlements.

The *White Hawthorne* litigation[206] that followed *NML* limited judicial intervention in the face of Argentina's good faith behaviour towards NML claimants. We argue that the post-NML cases which limit judicial intervention opens up a discussion into the kind of conduct that will trigger the *NML route* in two specific ways. First, what kinds of behaviour would count as good faith conduct? Second, in what way can the recognition of good faith behaviour draw on, expand or restrict the good faith norm implied in sovereign debt contracts?

This paper examines whether a specific good faith duty to negotiate can function as a doctrinal threshold that limits the NML route in attachment proceedings. The paper is organised as follows: Section 2 investigates the salience of good faith in sovereign debt litigation i.e. good faith as an overarching organising principle in the US common law. Section 3 considers its importance as a market norm that reins in opportunistic behaviour. Section 4 reviews institutional arrangements recognising the good faith duty to negotiate as key for orderly sovereign debt workouts and restoration of capital market access. Section 5 conceptualises how the common law doctrinal threshold will operate in attachment proceedings and how this will require judicial deference until such time as debt workouts settle. The last section concludes.

[204] Here, US district court granted injunctive relief to the holdouts, ordering that 'whenever the Republic pays any amount due under the terms of the exchange bonds, it must concurrently or in advance pay the holdouts the same fraction of the amount due to them' ("Ratable payment").

[205] Such sub-set of creditors are often known as vulture funds, who buy distressed debt at steep discounts in secondary markets with the aim to litigate later for full face value plus interest amounts.

[206] See *White Hawthorne, LLC v. Republic Argentina,* No 16-cv-1042 (TPG) (S.D.N.Y. Dec. 22, 2016)

5.2.2. Good faith and limits on the exercise of judicial discretion in commercial contracts

In contract law generally, the meaning of the obligation of good faith and fair dealing implied into contracts has been notoriously unclear.[207] Black Law's Dictionary defines "good faith" as "an intangible and abstract quality with no technical meaning". Attempts to identify the scope of such a 'nebulous standard' are fraught and have caused common law courts "intractable difficulty". This is matched by exasperation amongst contract scholars, 'who have had very little success in agreeing on standards that might give court guidance.'[208] This section examines whether the common law jurisprudence on good faith in commercial disputes delineates a template for judicial deference and explores the relevance (and feasibility) of this template in managing the NML legacy.

Contract scholars highlight the difficulties of mismatches between '...what legislatures and judges say, and …what judges do.'[209] For instance, the Uniform Commercial Code (U.C.C.) general definition of good faith includes both "honesty in fact and the observance of reasonable commercial standards of fair dealing"[210] In response to the question about when the duty is breached, the courts have unrestricted powers to determine what would constitute appropriate 'post-formation' conduct regardless of what is specified in the contract itself and what is viewed as commercially acceptable behaviour. This opens up, rather than limits, the policing of contract performance by the courts. The focus therefore is on the development of doctrinal tests to limit judicial intervention and contain the scope of a good faith inquiry.

At a theoretical level, good faith contractual performance operates as a general organising principle in the common law of contract. This principle underpins and informs good faith obligations as these exist in different types of contractual relationships and contracting situations. Commercial litigation reveals a further manifestation of this organising principle. Here the courts engage in good faith discussions recognising the importance of private ordering and commercial certainty. As the discussion that follows indicates, good faith as an organising principle in this context typifies the view that contracting parties should have 'appropriate regard' to the legitimate contractual interests of each other. In contract law, the

[207] It is assumed here that the U.C.C. does not apply in the context of sovereign debt contracts. However, the working assumption in this paper is that the standard specified in the Code will influence the common law doctrine as this develops in sovereign debt litigation.
[208] See (White and Summers, 2010, p. 14).
[209] MM 2051
[210] Id

minimum regard required is that a party not seek to undermine these legitimate, mutually contemplated interests, otherwise the party would be acting in bad faith.[211]

This section clarifies the nature of a good faith determination in contract law disputes involving sophisticated commercial parties. To assess an allegation of a breach of a good faith and fair dealing norm, the courts engage in a threshold determination of whether there is 'bad faith'- if there is, then there is a breach of the good faith norm.

5.2.2.1. *Katz v. Oak*: No Coercive behaviour, No Good faith breach

Katz[212], for instance involved a discussion of what constitutes 'coercive behaviour' in a dispute between the plaintiff owners of long term debt securities issued by Oak.[213] The issue of coercion was raised to enjoin the conclusion of an exchange offer and consent solicitation made by Oak to holders of its long-term debt. Katz and other similarly situated claimants alleged 'that the linking of the offer and the consent solicitation constitutes a breach of a contractual obligation that Oak owes to its bondholders to act in good faith.'[214] The main concern of the court was of course to identify the meaning of 'coercion' for the purpose of determining whether there was a breach as claimed. In doing so the court was avoiding the controversial business of identifying conduct that would constitute good faith. Instead the court was attempting to identify the relevant legal norm on the basis of which the coercive conduct would be deemed wrongful in contract law. In the absence of a clear finding of wrongfulness in contract law, the conduct claimed would not be coercive and there would be no breach of a good faith duty. The court is attempting to delineate a clear test or legal rule for wrongfulness. This test limits the exercise of judicial discretion in policing contract performance to evidence of wrongfulness.

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[211] This distinguishes good faith from duties of a fiduciary. See *Bhasin v Hrynew*, 2014 SCC 71, (Here the court recognized that good faith is a "general organizing principle" that underlies contract law, speaking to the obligation of honest performance in contracts)

[212] See *Katz v. Oak Indus. Inc.*, 508 A.2d 873 (Del. Ch. 1986) – one of the initial cases to deal with a consent offer as a breach of the implied covenant of good faith and fair dealings.

[213] Oak Industries offered to sell off certain assets to a company called Allied-Signal. In addition to purchasing these assets, Allied agreed to buy a portion of Oak's debt provided that 85% of debtholders agreed to an exchange – employing a form of exit consent for bondholders who held out. Katz brought action against Oak claiming (1) the exchange offer was coercive because any 'reasonable' debtholder would take the offer, and (2) the exchange benefitted shareholders at the expense of debtholders. The court ruled that the offer was not coercive and thus not a breach of the implied good faith covenant, as the offer provided for a price higher than the current value of the bond should the debtholder wish to trade on the market. The court ran that the board of directors owed fiduciary duties to shareholders, and taking value from debtholders did not violate such duties. For more details see (Anderson-Parson et al., 2015)

[214] See *supra* note 212 at 878

The question then examined by the court was the 'contractual theory' behind the implied obligation 'that each party to contract will act with good faith towards the other with respect to the subject matter of the contract'[215] Referring to Corbin on Contracts[216], the purpose of contract law according to the Katz court is 'to enforce the reasonable expectations of the parties induced by promises'. This clearly delineates the judicial role in that the courts must 'look at the substance rather than the form of the agreement and to hold that the substance controls over form,'[217] To achieve this purpose, the courts must recognise 'that the parties occasionally have understandings or expectations that were so fundamental that they did not need to negotiate about those expectations.' The duty of the court in this circumstance is to recognise that 'the spirit of the bargain is higher than its duty to the technicalities of the language'[218] In other words, the courts must defer to the spirit of the bargain and refrain from exercising its discretion 'to scrutinize the motives of contracting parties'.[219]

In a situation where good faith is implied as a contractual obligation to seek relief, the Katz court specified a doctrinal threshold that limits the exercise of judicial discretion to police the performance of covenants that link wrongfulness and good faith. This link between wrongfulness and good faith must be either expressed as a contract term or be in the mutual contemplation of the parties. In accordance with the appropriate legal test, in this case, the spirit of the bargain was that the parties did 'not proscribe the act later complained of as a breach of the implied covenant of good faith.'

Katz opens up the possibility that in certain contract situations, wrongfulness can be the failure of a party to perform a specific duty.[220] Following Katz, this section answers the hypothetical: if they could, would parties have inserted this specific duty into the contract? If yes, what would this duty be? More specifically (and controversially) what conduct would evidence the fulfilment of this duty?

The common law courts exercise wide discretion in determining what constitutes conduct that evidences the breach of an implied good faith and fair dealing duty. However, as the

[215] See *supra* note 212 at 880
[216] See (Corbin and Perillo, 1993)
[217] Id
[218] Id
[219] See *Bhasin v Hrynew*, 2014 SCC 71
[220] A recent attempt at doing this is the Bhasin case, *supra* note 219

analysis of Katz above shows, the judicial exercise of this discretion is limited by common law doctrinal tests. In the common law, this restriction is a matter of law rather than facts.

5.2.2.2. *Metropolitan Life v. Nabisco*: No Denial of legitimate, mutually contemplated benefit, No Good faith breach

The issue of the breach of an implied good faith duty was raised three years later in *Nabisco*.[221] This case involved the announcement by Nabisco of a leveraged buy-out (LBO) of its shareholders. The announcement of the LBO led to a bidding war. The company eventually accepted an outside offer which the plaintiffs to the present action claimed 'drastically impaired the value of their bonds' resulting in a multimillion dollar loss to them. They moved for summary judgment alleging the "breach of an implied covenant of good faith and fair dealing'. The implied covenant alleged was a duty 'not to incur the debt necessary to facilitate the LBO and thereby betray what they claimed was the fundamental basis of their bargain with the company.'[222] In a similar vein to Katz, the Nabisco court found that the ''fruits' of the plaintiffs indentures did not include an implied restrictive covenant that would prevent the incurrence of new debt to facilitate the recent LBO.' In this case, the court held "that the plaintiffs do not invoke an implied covenant of good faith to protect a legitimate, mutually contemplated benefit of the indentures; rather they seek to have this court create an additional benefit for which they did not bargain."[223] The *Nabisco* court reinforces a doctrinal threshold that limits the exercise of judicial discretion in policing contract performance on the grounds of a breach of an implied good faith and fair dealing obligation. Like Katz, this is a legal threshold that requires judicial deference to the mutually contemplated 'fruits' of the indentures. This is not a factual inquiry that relies on the specification of conduct that would be viewed as either good faith conduct or using Summer's excluder analysis conduct that evidences bad faith[224]. Thus the judicial role is confined to situations in which there is a denial of 'a legitimate, mutually contemplated benefit. In the absence of such a denial there is no breach of an implied covenant of good faith and fair dealing and by implication judicial deference to expressed terms.

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[221] *Metropolitan Life Ins. Co. v. RJR Nabisco, Inc.,* 716 F. Supp. 1504, 1989 U.S. Dist. Lexis 6253 (S.D.N.Y. May 31, 1989)
[222] Id 1507
[223] Id 1519
[224] See (Summers, 1982, pp. 810, 816) proposing excluder-analysis approach to good faith. See also (Summers, 1968, pp. 195,196).

5.2.2.3. *CIBC v. Brasil*: No Refusal to recognise contractual rights, No Good faith breach

The issue of good faith was discussed in the case of *CIBC v Banco Central do Brasil* [225] by the US District Court. This dispute arose in the period before the securitization of debt and involved a loan agreement.[226] The plaintiff creditors argued that the defendant bank (an entity exercising sovereign functions) was liable for breach of an implied covenant of good faith and fair dealing as the Bank had acted to prevent CIBC from declaring an acceleration.[227] In rejecting the creditors claim, the court cited the law in New York which made it clear that

"*Although the obligation of good faith is implied in every contract, it is the terms of the contract which govern the rights and obligations of the parties. The parties contractual rights and liabilities may not be varied, nor their terms eviscerated, by a claim that one party has exercised a contractual right but has failed to do so in good faith."*

Though the CIBC court recognised that good faith obligations are implied into every contract, contract performance would not be a ground to raise a claim of breach of this obligation. In other words, in a line of reasoning that follows CIBC, would the implied common law duty be breached in the event there is objective evidence of 'bad faith'? Yes. The doctrinal test here is that in the absence of 'evisceration' ('wrongfulness' in Katz), there is no breach of the implied term and therefore no reason for the court to police contract performance. One way to read this decision is that there is no scope for judicial intervention to enforce a good faith and fair dealing norm in the absence of evidence that reveals 'evisceration', 'bad faith' or wrongfulness.

5.2.2.4. *NML v. Argentina*: Refusal to recognise contractual rights, Good faith breach

As mentioned above, what was unclear in the NML case was what would count as evidence of 'bad faith' conduct. Were the actions of a 'recalcitrant' debtor – refusal to accept and fulfil the orders of the court- evidence of bad faith? Or was the refusal of Argentina to recognise the contractual rights of NML and others evidence of bad faith? Or as the court found, were non-ratable payments – paying other creditors while refusing to pay the holdouts- evidence

[225] See CIBC Bank & Trust Co. v. Banco Cent. Do Brasil, 886 F. Supp. 1105 (S.D.N.Y. 1995)

[226] The MYDFA was 'an agreement originally between the nation of Brazil, its Central Bank, and the numerous creditors holding Brazilian sovereign debt. Its purpose was to restructure that debt and to facilitate an orderly repayment of it, in the wake of Brazil's inability to make timely repayments during the mid-1980's.

[227] An acceleration clause is a contract term that on default triggers the payment of the full face value plus accrued interests.

of bad faith? Out of the three types of conduct clubbed together as 'bad faith', only one would qualify as 'bad faith' as per the legal analysis developed above – the refusal of Argentina to recognise the contractual rights of NML and others. This refusal denies the holdouts a mutually contemplated benefit – repayment. Following the common law test identified above, 'recalcitrance'[228] is not evidence of bad faith. Further, 'non-ratable' payments do not evidence bad faith. As far as a majority of the creditors were concerned, this was a 'legitimate, mutually contemplated benefit and by all accounts consistent with party expectations. Non-ratable payments did not deny the plaintiffs mutually contemplated benefit – repayment. The benefits were denied by the refusal of the debtor to negotiate their outstanding claims. The only conduct that satisfies the bad faith test (and thus breaches the implied good faith norm) was the failure of the debtor to negotiate with or even recognise the contractual rights of NML and other similarly placed holdout creditors. It is consistent with the doctrinal analysis of the test for good faith, that judicial intervention is confined to clear evidence of 'bad faith' - a refusal to negotiate with all or a subclass of creditors. This opens up procedural issues: At which point of the proceeding would this test be applied? After default, is an explicit recognition of a duty to negotiate necessary to fulfil the implied good faith and fair dealing norm? This question leads us to the following section which draws on the salience of the discussion of the good faith norm as a common law template for judicial deference in sovereign debt disputes and explores its importance as a market norm in reining in opportunistic behaviour.

5.2.3. Good faith in sovereign debt disputes

In US law, as discussed, it is uncontroversial that a good faith norm is an overarching principle implied into commercial contracts.[229] However, the sovereign debt context raises significant and distinct challenges. Sovereign debt contracts are unique. They are not discrete contracts but boilerplates with small variations in contract terms – the meanings of which are unclear.[230] This raises challenges for contract interpretation,[231] but in particular opens up the scope for judicial intervention in the face of the uncertainty about the meaning of contract terms. One of the aspects of the NML legacy is the uncertainty about the point at which the courts must defer to market practice and limit its discretion in policing contract performance. The focus of this section therefore is to examine the salience of the common law template of

[228] Recalcitrance in this context meant the refusal to obey court orders
[229] See *supra* note 212
[230] There is now a vast empirical literature examining the significance of these variations in contract terms. See (Gulati and Scott, 2013).
[231] See (Gulati and Choi, 2006) for the challenges to contract interpretation.

judicial deference identified above to sovereign debt disputes. This is with a view to manage the NML legacy.

5.2.3.1. The common law duty is narrower than the duty discussed in the economic literature

It has been argued that the implied obligation of good faith prohibits subordinating conduct.[232] A leading approach to the common law good faith doctrine[233] is the "foregone opportunities" approach, by Professor Burton. In his economic analysis of good faith, Burton[234] states that a party breaches good faith when they abuse their discretion by attempting to recapture opportunities – in the form of resources committed for fulfilling their promised performance – foregone during contract formation.[235] Burton argues that where contracts involve an unequal balance of discretion between the parties, the good faith doctrine serves to protect a "weaker" party against the "stronger" party's assigned discretion. This is a contracting situation that is distinct from the sovereign debt context involving sophisticated parties who do not occupy unequal bargaining positions. Therefore the good faith doctrine cannot be justified by the 'unequal balance of discretion between the parties'. Rather, as discussed in the case law analysis above, the good faith doctrine has a role to play in policing the exercise of contract discretion given evidence of 'bad faith'.

A more promising way to think of the economic significance of the good faith doctrine is provided by Duke (2007).[236] Here a regime that 'only enforces obligations expressly assumed under the contract' is less efficient than that which 'qualifies expressly assumed obligations by notions of good faith' because the latter is more likely to 'promote cooperation and contractual performance'. Parties consent to be bound by express obligations in contracts but are also 'bound by the norms of the relationship' between them, so that the implied duty of good faith takes effect when realities – of the evolving exchange relationship or a weakened cooperative spirit – strike as requiring reasonable conduct from parties in such situations. This approach recognises that good faith norms also have a function in sustaining contract performance (and cooperative behaviour). Unlike Burton, Duke recognises the significance of extra contractual norms that influence contractual performance. Examples

[232] See (Houh, 2003, pp. 1025, 1088).
[233] The Restatement (Second) Of Contracts § 205 (1981) in the United States provides that *"every contract imposes upon every party a duty of good faith and fair dealing in its performance and its enforcement"*. [Italics added for emphasis]. Similarly, Uniform Commercial Code (U.C.C. § 1-201(b)(20) (amended 2003)), as mentioned in Section 5.2.2, explicitly provides that *"Every contract or duty within [the U.C.C.] imposes an obligation of good faith in its performance and enforcement"* § 1-304.
[234] See (Burton, 1980, pp. 369, 372) proposing foregone opportunities approach to good faith.
[235] See (Houh, 2005).
[236] See (Duke, 2007).

would include the IMF references to good faith discussed below. However, Duke (2009) also argues for an expansive judicial role to provide a 'performance-inducing high enforcement' environment through imposing an obligation to act in good faith, as absent this, expectations about contract performance may fail if parties are only obliged to act solely according to the written agreement. This makes the judicial role pivotal in enforcing an obligation in good faith - the NML legacy. One reading of the NML decision was that the courts generated a 'performance-inducing high enforcement' through implicitly enforcing an obligation to act in good faith (as evidenced in the later case of *White Hawthorne*). In the face of weak enforcement, post-NML, an expansive judicial role in policing contract performance can easily become the only game in town. The argument developed in this paper makes a significantly limited case for judicial intervention – that the courts police performance only when there is clear evidence of 'bad faith', i.e. the denial of 'mutually contemplated benefits'.

5.2.3.2. Is opportunistic behaviour the same as bad faith?

The standard defence of good faith and fair dealing in normative law and economics is based on constraining opportunistic behaviour.[237] Courts police contract performance where one party (Party A) performs contrary to how the other party's (Party B) understanding of their relationship even if the performance is not contrary to expressed terms. More specifically, courts enforce a good faith duty to police opportunistic behaviour as this behaviour would otherwise transfer wealth from B to A. This transfer incentivises parties to take the steps required to protect themselves. The courts can intervene to enforce a good faith norm and reduce the costs of protection. [238] In his discussion on good faith Bayley (2009)[239] assumes that the courts can enforce a good faith norm, thereby address the problem of "contractual incompleteness" and remedy party opportunism. In so doing, the enforcement of this obligation can deal with incentivisation problems such as moral hazard[240] and thereby obtain

[237] (Muris, 1981, p. 521) defines opportunism as follows: "a major problem occurs when a performing party behaves contrary to the other party's understanding of their contract, but not necessarily contrary to the agreement's explicit terms, leading to a transfer of wealth from the other party to the performer – a phenomenon that has come to be known as opportunistic behaviour". Furthermore, Cohen (Cohen, 1992) describes opportunism as "any contractual conduct by one party contrary to the other party's reasonable expectations based on the parties' agreement, contractual norms, or conventional morality."

[238] (Mackaay, 2012) suggests likewise that the market of creditors and debtors will incur a net social loss through attempts made by parties to protect themselves against opportunistic behaviours of their counterparts. Thus the duty of good faith provides certain safeguards that are less costly than the compensations individuals demand against the risk of bad faith conduct.

[239] See (Bayley, 2009).

[240] Moral hazard is the risk that a party to contract has not entered it in good faith, Definition sourced from (Gastineau and Kritzman, 1992) (In order words, a party has an incentive to take unusual risks in an attempt to reap unmerited benefits before the contract ends. It arises when both the parties have incomplete information about each other).

efficient and welfare maximising outcomes.[241] It has been argued that the courts can reduce the costs of these steps by policing contractual performance with a requirement of good faith and fair dealing. There is however little clarity in the literature on how opportunistic conduct can be identified and whether this conduct can be reined in by the enforcement of a good faith duty. An inquiry into either dimension also envisages significant and expansive[242] intervention by non-specialist judges who must identify opportunistic conduct and then develop a good faith duty to reduce the cost of protection.[243] Nevertheless, the common law test of bad faith is much narrower than the opportunistic conduct discussed in the economic literature since, as indicted above by the case law analysis, contract performance absent bad faith does not meet the threshold for the courts to police contract performance. By courts recognising a good faith duty to negotiate, the common law offers a template for judicial deference to ongoing debt negotiations. The following draws on institutional settings recognising this good faith duty to negotiate which reinforces such duty as an established market norm in sovereign debt.

5.2.4. Good faith as an established duty to negotiate in sovereign debt markets

Successful debt workouts indicate that market practice is informed by good faith and fair dealing norms. For instance, consensual debt workouts in the face of expressed clauses that mandate unanimous consent to modify terms evidence party expectations of implied good faith and fair dealing norms that inform post-default contract performance. Likewise, at the institutional level, good faith and fair dealing norms are recognized as part of wider post-default stakeholder responses to debt negotiations. The IMF[244] and the IIF[245] for instance

[241] Bayley (2009) claims that greater transaction costs may be incurred by parties in order to protect against opportunism caused by contractual incompleteness.

[242](Mackaay, 2012) argues that the law needs an 'open-ended arsenal of responses' to opportunism as it may take an infinite number of forms and may be difficult to assess. This provides a strong case for why the good faith definition cannot be reduced to a definite set of acceptable behaviours, giving rise to the open-ended approach to good faith as suggested by Professor Summers. The open-ended instrument allows courts with considerable discretion to punish undesirable acts (Mackaay and Leblanc, 2003). However, as this would cause a problem of legal uncertainty and thus to address certain related opportunism concepts, some boundaries to the good faith norm may need to be in place to provide measures of legal certainty (Mackaay, 2012).

[243] According to (Mackaay and Leblanc, 2003), good faith is the 'exact opposite of opportunism' i.e. to act in good faith is essentially to refrain from opportunistic conduct considered to be bad faith. Moreover, they mention that the cost of protecting oneself against opportunism means foregoing some gains from trade. As a result, the good faith obligation can be seen as a cost-effective legal doctrine to deter opportunism.

[244] See (International Monetary Fund, 1999), (International Monetary Fund, 2002), (International Monetary Fund, 2013), (International Monetary Fund, 2015Annex I).

[245] See (Institute of International Finance, 2013).

explicitly rely on good faith and fair dealing to reinforce the actions taken by market actors to protect themselves from opportunistic behaviour by debtors and creditors alike until such time as heterogeneous claims are settled. However, attempts to scrutinize, verify and enforce good faith and fair dealing norms in these formal and informal institutionalised settings have been repeatedly criticised as being vague and imprecise.[246]

5.2.4.1. The IMF and a duty to negotiate

The intervention of the IMF offering Lender of Last Resort support is conditional on evidence of the debtor fulfilling a good faith duty. In its revised LIA policy in 1999, the Fund permits continued support to debtors under LIA provided, inter alia, that there are 'firm indications suggesting that the debtor is negotiating in good faith' 'to reach a collaborative agreement with' its private creditors. The requirement to negotiate in good faith was intended to address delays in bond restructuring on account of the lack of creditor coordination.[247] A key problem with this policy was that the good faith criteria specified was vague and lacked definition.[248]

In 2002 the IMF revisited the good faith criterion and set out the principles that would guide the dialogue between the debtor and its creditors. This revision elaborated the duty to negotiate. This policy change centred on the requirement that the debtor actively seek out ways in which to negotiate a settlement with its creditors as part of its overarching good faith obligation.[249] In particular, the policy paper set out practices for guiding negotiations between the debtor and a representative committee[250] including agreeing to a standstill on litigation during negotiations. The policy relies on a determination of good faith compliance – an assessment of whether the debtor is negotiating with its creditors as recommended – in exchange for creditors agreeing to suspend litigation that would otherwise disrupt ongoing

[246] See (Lerrick, 2004).
[247] See (International Monetary Fund, 1999)
[248] See (Lerrick, 2004).
[249] These guiding principles include the following: the debtor should (1) seek early dialogue with creditors and continue until restructuring is complete; (2) share with all creditors information on the economic and financial situation, structural adjustment program, how restructuring plan would restore medium-term sustainability and the treatment of all different types of debt claims; (3) provide creditors with early opportunity to offer ideas on the design of restructuring strategies and instruments. The modality for conducting such a dialogue will be up to the individual debtor and thus case-specific. It will depend upon the complexity of the case, the degree of creditor heterogeneity, the readiness of creditors to negotiate within a formal collective framework e.g. a steering committee and the willingness of creditors to agree to a debtor's offer that is within the financing parameters under the Fund-supported program. For more details, see (International Monetary Fund, 2002).
[250] Such practices are guided by principles underpinning the operations of bank steering committees in the 1980s, adjusting for recent developments in the capital markets.

negotiations.[251] This is consistent with formal bankruptcy proposals indicating for the need for a stay on litigation – a judicial deference to ongoing negotiations.[252]

The IMF policy also recognises the problems posed by increased litigation – a necessary consequence of creditor heterogeneity – where some creditors would choose to negotiate and others hold out for the face value of their debt. The policy recognised that aggressive creditor litigation had to be limited. The LIA policy would ensure that distressed debtors are in receipt of funding despite creditors unwillingness to accept the financial parameters under the fund-supported program. This was possible on the condition that the debtor was making good faith efforts to negotiate to eventually achieve a collaborative agreement with its creditors.[253]

5.2.4.2. IMF Good faith policy – Problems of vagueness

The reliance by the IMF on structural adjustment as a component of LIA has been severely criticised for its lack of effectiveness in restoring financial stability.[254] In response to the developing situations in Greece and Argentina, the IMF undertook a review of LIA. This review found variations in the application of the 'underlying guiding principles to assess whether the good-faith effort criterion is observed'. For instance 'in four of the Fund-supported programs reviewed (Dominican Republic, Grenada, Seychelles, and St. Kitts and Nevis), the LIA policy was considered met'. Here 'staff generally judged that the authorities were engaged in good faith efforts to reach a collaborative agreement with creditors.' However, the problems of vagueness about the criterion itself plagued these efforts.[255] The policy did not specify or list the types of conduct that would satisfy the good faith criteria.[256] The criterion was ad hoc and sui generis and modified to each crisis situation as these arose. The salience of the duty to negotiate as part of the good faith criterion has however not been disputed. It is clear that the duty to negotiate is a context-specific understanding of

[251] Additional requirements include the following: (1) steering committee needs to be representative of all private creditors, where subcommittees may be created in more complex restructurings; (2) debtor shares all relevant information, including confidential information, for creditors to make informed decisions. Confidentiality of any material non-public information must be respected by the committee; (3) Costs incurred by the steering committee would be borne by the debtor.

[252] For details on bankruptcy proposals, see (Buchheit et al., 2013).

[253] See (International Monetary Fund, 2002).

[254] See (Mody, 2015). The IMF policy has also been criticised on the grounds of moral hazards, systemic risk to the banking system. Moreover, it has also been criticised for its poor performance in the Argentine debt crisis.

[255] It was also noted that 'it was not always clear how a member's adherence to the underlying guiding principles of the good faith criterion should be assessed.'

[256] The lack of clarity has also been discussed in (Lerrick, 2004).

the good faith norm that informs party expectations about implied obligations in post-default contract performance. In addition to the IMF, other institutions recognise good faith as underpinning debtor's obligations in post-default negotiations as discussed in the following subsection.

5.2.4.3. The IIF and a duty to negotiate

In 2004, the Institute of International Finance (IIF) - a global association of financial institutions, (IIF) [257] launched a voluntary code - Principles for 'Stable Capital Glows and Fair Debt Restructuring'. This code of conduct applies to all sovereign debt issuers and their private sector creditors and is aimed at preserving the access of sovereign debtors to external financing during periods of financing distress ('the Principles'). The code incorporates market-based guidelines for the behavior of both parties with the 'aim of maintaining and promoting stable capital flows, financial stability and sustainable growth'. The Principles help to promote crisis prevention and resolution through sound debtor 'policies, data transparency, open communication and dialogue with creditors', as well as guiding good-faith negotiations with representative creditors and discouraging discriminatory treatment of creditors. [258] The Principles explicitly recognize party expectations of good faith negotiations and contain an established process to monitor dialogues between debtors and its creditors to evaluate their adherence to good faith obligations. Like the IMF criterion, the IIF good faith principle elaborates the conduct required to fulfill a duty to negotiate. The negotiations must be a 'Voluntary good faith process'[259] respecting the 'Sanctity of contracts' where contractual rights are to remain respected and fully enforceable to uphold its integrity and voluntary nature. The process specifies 'Vehicles of restructurings' which require early post-default negotiations with representative creditors.[260] The code also specifies 'Creditor

[257] It was created by 38 banks of leading industrialized countries in 1983 in response to the international debt crisis of the early 1980s. Its mission is to 'support the financial industry in the prudent management of risks; to develop sound industry practices; and to advocate for regulatory, financial and economic policies that are in the broad interests of its members and foster global financial stability and sustainable economic growth'. IIF members include commercial and investment banks, asset managers, insurance companies, sovereign wealth funds, hedge funds, central banks and development banks. It currently has close to 500 members from 70 countries. The Principles are monitored by two oversight bodies—the Group of Trustees and the Principles Consultative Group (PCG), which includes senior officials from developed and emerging-market countries, as well as senior bankers and investors. See https://www.iif.com/about and (UNESCAP, 2000).

[258] IIF principles has been reportedly useful particularly for sovereign debt restructuring episodes in Grenada (2015) and Ukraine (2015). Its 2015 report supports the agreement issuing from the negotiations between Ukraine and its private creditors, noting good-faith efforts made that suggested both parties were 'flexible and willing to compromise' See (Institute of International Finance, 2015, p. 8)

[259] IIF encourages the implementation of the good faith criteria under the IMF policy on lending into arrears to private creditors.

[260] An Institute of International Finance (2015) statement makes it clear that 'an early discussion is necessary between the representative private creditor committee and the sovereign debtor, in close consultation with

committee policies and practices' so that, for instance, when a creditor committee is formed, it should abide by established ethical standards, form a single committee at the earliest opportunity taking account the interests of all affected bondholders and so forth.[261] Finally, the code specifies 'debtor and creditor actions during restructuring'. So, for instance, debtors are expected to service debt partially while negotiations are ongoing as a sign of good faith and restrict further exchange controls on capital outflows. Though the *Principles* are applied flexibly on a case-by-case basis as individual country debt crises are unique, the IIF report as observed stresses good-faith negotiations as a key element of debt workouts, and a move away from this principle is considered 'inconsistent with international understandings that have been historically at the heart of sovereign debt restructurings'.

5.2.4.4. IIF acknowledges imprecision of "Good faith" duty

However, the IIF report states that 'it is very difficult to come to a precise definition of "good faith" and is neither wise nor practical to seek an exhaustive set of criteria to evaluate this principle.' It rather proposes that participants in negotiations should 'indicate when it believes that actions of another party *have not been* conducted in good faith'. There is the recognition that 'bad faith' actions can be more easily identified to find that a good faith obligation has not been fulfilled.

5.2.4.5. Good faith breach confined to identifiable bad faith conduct

This discussion indicates the widespread acceptance amongst market actors and the official sector of a good faith and fair dealing expectation that informs debtor and creditor behavior in post-default context. However, this discussion also reveals that the identification of good faith conduct is a term of art and in most cases depends on a belief 'that the actions of another party have not been conducted in good faith'. In other words, good faith discussions only

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the official sector, on the overall multi-year macroeconomic framework and objectives, including the broad fiscal policy targets and the underlying outlook for output growth and public debt under alternative assumptions on the debt restructuring.'

[261] The creditor committee must also protect confidential information arising from negotiations and commit not to use this information for trading purposes; act as a 'communication link' between the debtor and its creditors through which the debtor can present its economic program and financing proposals; collect and analyse economic data, as well as gather, evaluate and disseminate creditor input on financing proposals. Further, IIF acknowledges the concerns expressed by debtors regarding the set-up of creditor committees. Some of the concerns include underrepresented creditor committee group, sour relationships with certain committee members hampering negotiation prospects, committee process 'slow-moving and causes delay in the resolution of a debt problem' and untrustworthiness of certain types of creditors in 'maintaining required confidentiality and obeying applicable trading standards. The IIF report introduced practices to address these problems, ranging from cooperation and trust development to the management of diversity of the creditor community.

arise in the face of identifiable 'bad faith' conduct. This conduct is then policed either within the frameworks of the IMF policy or that of the IIF voluntary code.

This section describes an established market expectation of good faith and fair dealing norms that elaborates a duty to negotiate, as well as clarifies what key stakeholders perceive to be "legitimate, mutually contemplated benefits". The mechanisms by which these norms are enforced are unclear but effective. The discussion provides the context-specific understanding that recognising a duty to negotiate fulfils the legitimate interests of contracting parties. The failure to negotiate is thus in breach of a good faith and fair dealing norm triggering the exercise of judicial intervention – the NML route. In the following section, we provide a clarification of how the recognition of a common law good faith duty to negotiate can achieve the purpose of confining judicial intervention to situations in which there is objective evidence of 'bad faith' – the denial of mutually contemplated benefits – and offers a template of judicial deference to debt workout negotiations in the absence of such evidence. The options discussed are with a view to managing the NML legacy.

5.2.4.6. Other considerations: Good faith duty in addressing opportunism and other inefficiencies

Common forms of opportunism identified in the sovereign debt literature are moral hazard, holdout and free-riding. The economic effect of the good faith duty on the moral hazard incentive associated with over-borrowing is not very clear. The good faith requirement may address over-borrowing concerns beyond its capacity to repay as the debtor knows that, during negotiations post default, he must be able to demonstrate to creditor(s) that unsustainable debt is caused by domestic/external shocks and not the government decision to accumulate debt beyond repayment capacity.

On the flipside, the good faith duty could make default more frequent: Buchheit et al. (2013) identifies certain pathologies of sovereign debt such as the debtor moral hazard associated with the presence of international bailouts. If the debtor's fulfilment of the good faith duty means that it will receive bailout or contracts become less enforceable (as courts recognise good faith conduct), then the debtor may be incentivised to strategically default and make good faith efforts to negotiate. Though the debtor must fulfil the transparency requirement, it may not be so obvious to the creditor(s) the debtor's motive to default. Additionally, identified in the Buchheit et al. (2013) were other issues raised in relation to the restructuring of unsustainable debt – "restructuring too little" and "restructuring too late". Good faith negotiations post default help to discourage procrastination of debt restructuring. As mentioned in the Brookings report, prolonged defaults can reduce a sovereign's capacity and

willingness to pay. The mutual duty to negotiate in good faith helps mitigate this effect by increasing the predictability of debt workouts and thereby reducing the lack of investor confidence – that would otherwise have spill-over effects on various parts of the economy – and thereby reducing the associated costs of default.

Moreover, International Monetary Fund (2013) describes some incentivisation problems that may lead to prolonged delays in restructuring debt. It reports cases in which countries, such as Greece (in 2012), Belize (in 2007), Seychelles (in 2009) and St. Kitts and Nevis (in 2012), delayed restructuring because, among other things, there was the loss of market access and the 'ample availability of official financing'. The good faith condition for official financing will thus reduce these incentives to delay restructuring by encouraging early dialogue between the debtor and its creditor(s). On the issue of restructuring-too-little, the good faith duty may also have a desirable outcome. International Monetary Fund (2013) reports that some restructuring episodes of certain countries were based on overoptimistic debt sustainability assessments with relatively small face-value haircuts that did not eventually restore debt sustainability, resulting to insufficient debt reduction. The duty to engage in good faith negotiations, according to the IMF lending to arrears policy, requires that the debtor offers the creditor terms consistent with the parameters of the Fund-supported program. Therefore, making offers in good faith consistent with debt sustainability, in the likes of the IMF LIA policy, may help address the problem of restructuring too little.

It has been widely advocated that courts should consider various strands of opportunism from both the creditor and debtor side when finding a violation of the implicit duty to act in good faith. For example, Goldmann (2014) indicates that the good faith principle provides a basis for a duty on both the sovereign debtor and its creditor(s) to enter into negotiations in the presence of unsustainable debt, as well as a basis for a duty by the creditor to not obstruct negotiations and to not engage in abusive behaviour aimed at extracting preferential settlement. Goldmann (2014) mentions the precision of the practicalities of such good faith duties will determine the effectiveness of debt workouts. Goldmann (2016) argues that the "incremental approach", i.e. good faith as a general principle of law between statutory and contractual avenues for sovereign debt workouts, improves the legal framework for governing restructurings. He argues here that the good faith principle potentially smoothen debt workouts through the 'duty to negotiate, exercise of voting rights in good faith and the refrainment of abusive holdout strategies'. A further pointed he made has that a duty to negotiate is a necessary to achieve greater debt sustainability. Furthermore, UNCTAD argues that workouts must be smooth to achieve such (UNCTAD, 2015a).

A mutual good faith duty, thus, has the potential to produce more ex-ante benefits, for example encouraging sovereign debtor to engage in good policy efforts, incentivising the creditors to undertake cautious lending decisions and increase creditor coordination. In relation to transparency, IMF good faith duty requires sharing of information, including the economic and financial state of the nation, causes of the crisis etc. and creditors may use such information during early negotiations with the debtor to assess whether the default was an 'ability to pay' problem or a 'willingness to pay' problem or whether an 'ability to pay' problem was caused by reckless fiscal policies or bad luck from negative domestic and external shocks. Therefore, the good faith duty requiring honesty and transparency in negotiations will incentivise the sovereign to undertake sound fiscal policies to ensure inability to pay is caused by bad luck to convince creditors to a debt restructuring. Another concern is creditor moral hazard, associated with reckless lending behaviour due to the presence of official sector bailouts. Good faith requirement may mitigate this problem by requiring the creditors to engage in a constructive dialogue with the debtor to the end of achieving a debt restructuring. Creditors knowing that they must engage in negotiations for debt write-down will alter their incentives towards undertaking cautious lending decisions. Furthermore, the December 2016 district court decision of White Hawthorne vs Argentina suggests that future holdout creditors will not be able to invoke the ratable-payment interpretation of the pari passu clause – that gave rise to the court injunction order on third party payments in NML vs Argentina – when the debtor negotiates in good faith with the holdouts. Therefore, the good faith duty reduces the availability of powerful enforcement tools, reducing the incentives to free-ride on other holdouts litigation strategies and thus increases creditor coordination.

In relation to fairness, the debtor's duty to negotiate in good faith enforces equal treatment of all creditors dissuading arbitrary discrimination against them. Therefore the good faith duty enhances equitable outcomes in debt restructuring by the requirement to share relevant information to all creditors and provide creditors the opportunity to make counter restructuring offers whether bilaterally or through creditor committees.

5.2.5. Operationalizing a proposed good faith duty to negotiate

There is a gap in sovereign debt good faith jurisprudence in so far as there is no legal doctrine derived from the implied good faith duty that applies to all non-standard debt contracts disputes. Following the NML case, it can be argued that this gap leads to unjust outcomes that are ad hoc and imprecise and thereby diminish commercial certainty. Therefore this

section discusses three scenarios to clarify how this implied good faith duty to negotiate can be operationalized to provide a template for judicial deference.

In the first scenario, the courts are under pressure to 'level up' from established market practice to find attachable assets in the context of weak enforcement. For example, in the face of Argentina's refusal to negotiate with the holdouts - the *NML* courts levelled up from market practice (non-ratable payments) to overcome weak enforcement ('*the NML route*'). In the second scenario, we see a shift. The *Hawthorne* court was levelling down as they confined the wide application of *the NML route* (and its role) to certain conduct. However this was partial as they did not specify the kinds of conduct that would trigger *the NML route.*[262] The third scenario provides a complete levelling down approach where the court defers to good faith market norms of the parties. Here, we provide a template for judicial deference in cases where the good faith duty to negotiate is fulfilled. The doctrinal test of whether or not a good faith duty to negotiate is fulfilled should be further informed by evidence presented by the debtor government, the IIF and the IMF, the latter – as indicated above – explicitly work within a good faith framework.

5.2.5.1. NML: Ratable payment interpretation: the court levels-up

Argentina declared a moratorium on its outstanding debt in 2001 and made no payments for six years on plaintiffs bonds while simultaneously fulfilling its obligations on its exchange bonds. Argentina refused to negotiate with one set of its creditors. In doing so, the debtor was 'eviscerating' the contractual rights to payment of this set of creditors. Argentina then renewed the moratorium in its budget laws every year after 2001. It also declared in the prospectus documents associated with the two exchange offers in 2005 and 2010 that "it is not in a legal … position to pay" the defaulted debt. It also enacted legislation "the Lock law" which had been given full effect in its domestic courts. This law prohibited Argentine officials from paying defaulted bondholders and the courts were barred from recognising the judgements of the US courts. This refusal to negotiate with a subset of its creditors eviscerates[263] their claims and as such is in breach of the good faith norms embedded both in IMF policy and the IIF Principles.

[262] (Buchheit and Gulati, 2017)

[263] In the NML decision the court found that "the combination of Argentina's executive declarations and legislative enactments have insured that plaintiffs beneficial interests do not remain direct, unconditional, unsecured and unsubordinated obligations of the Republic and that any claims that may arise from the Republic restructured debt do have priority in Argentine courts over claims arising out of the Republic's unstructured debt". In a subsequent decision the court found that in response to the Supreme Court denial of

In the NML decision the court found that the debtor had engaged in what was described as continuing conduct that effectively "ranked its payment obligations to the plaintiffs below those of the exchange bondholders". Given the context of weak enforcement and the dismantling political economy modular framework that would otherwise have constrained opportunistic behaviour, there was pressure on the court to enforce the contracts, attach payment streams with a 'ratable' interpretation and in the process 'level up' from market understandings of good faith conduct that included non-ratable payments.

Figure 5.2 illustrates how the court levels up from market understandings of what constitutes good faith conduct in two specific ways – contract interpretation and injunction. The contract interpretation relied on a literal interpretation of the *pari passu* clause. The court interpreted the clause to mean ratable payments. It followed then that all instances of non-ratable payments were contractual breaches as opposed to legitimate exercises of debtor discretion. In the absence of a doctrinal test that recognised a general duty to negotiate and required objective evidence of evisceration, the court relied instead on an unlimited list of objectionable debtor conduct and intention not to obey the orders of the court[264] to interpret a contract term.

For the purposes of granting a remedy, the scope of what would count as recalcitrance is wide and extends from legislative conduct to statements by governments in the press. As mentioned, the identified array of recalcitrant behaviour was not confined to the 'Republic's failure to make scheduled payment on its debt'. In the court's view, the conduct extended to the 'Republic's "entire and continuing course of conduct", including harmful legislation like the Lock Law[265] and incendiary statements by the former administration'.[266]

The wide scope of what would constitute objectionable debtor behaviour to trigger the '*pari passu'* interpretation was reaffirmed by the 2nd Circuit. This would include the 'combination

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the Republic's for a writ of certiorari, the Republic announced a plan to pay on the exchange bondholders without making a payment to the FAA bondholders. The court also found that it had attempted to make two additional payments. The court also found that between 2014 and 2015 the Republic made three illegal transfers with the intention of paying on the exchange bonds without making a ratable payment to the lead plaintiffs.

[264] The court also noted that the Argentine president announced it would "pay on the exchange bonds 'but not one dollar' to the 'vulture funds'". The court also noted the economy ministers statements that "Argentina isn't going to change its position of not paying vulture funds … we will continue to follow that policy despite any ruling that could come out of any jurisdiction, in this case New York". Finally, the court noted a post on the presidential website that criticised "the 'justice system' overseen by it and the statement that it was "evidently … unaware of its own legislation".

[265] The Lock Law declared that "The national Executive Power may not, with respect to the [defaulted] bonds…, reopen the swap process established in the [2005 exchange offer]. The national state shall be prohibited from conducting any type of in-court or private settlement with respect to the [defaulted] bonds …"

[266] *NML Capital, Ltd. v. The Republic of Argentina*, 699 F.3d 246-265 (2d Cir. 2012) at 20 (on Argentina's executive declarations and legislative statements)

of Argentina's executive declarations and legislative amendments" and its entire "course of conduct". This finding of recalcitrance opens up two further sub-questions - what would count as recalcitrant conduct? Would for instance objective evidence of the debtor engaging in negotiations with only a minority or a larger subset of creditors willing to participate in a debt restructuring, that would inter alia entail a write-down in the face of their debt, be viewed as recalcitrance triggering the *pari passu* clause?

The injunction that followed the *pari passu* interpretation led to default. The court overlooked the third party claims violated in the process. When viewed from the perspective of the implied good faith duty as an organising principle, a standard that underpins all contracting situations, the court was responding to what was really an evisceration of the terms of the contract as far as the holdouts were concerned. The debtor was acting in bad faith and as such was in breach of the implied duty. However, to overcome the reality of weak enforcement, the court was levelling up from a market recognised good faith duty to negotiate. In the absence of a clear specification of conduct that constitutes recalcitrance, levelling-up expands the exercise of judicial discretion to decide what conduct constitutes good faith.

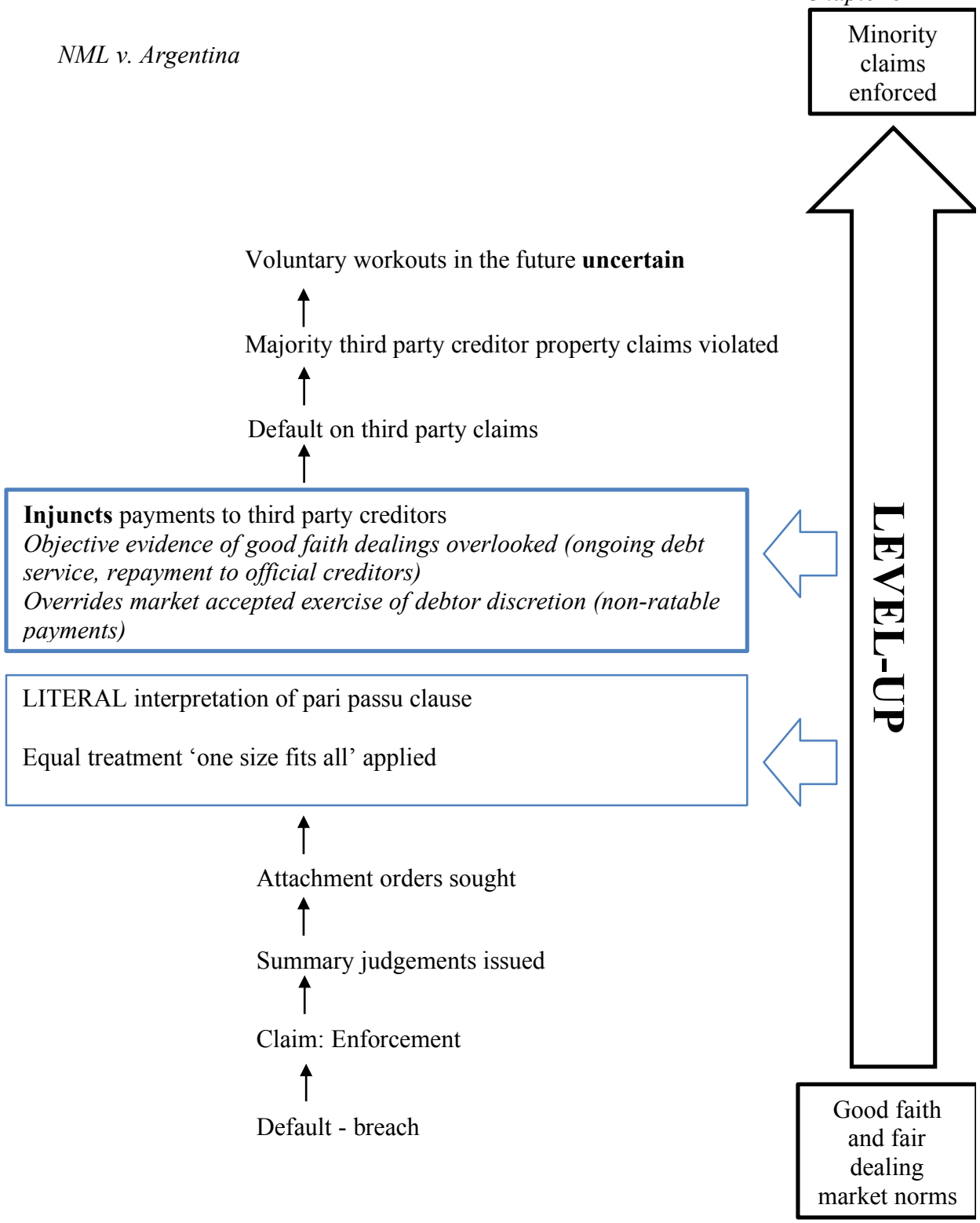

Figure 5.2 – *NML* 'ratable' payments interpretation – Levels up

5.2.5.2. White Hawthorne: Partial levelling down

The *White Hawthorne* action[267] filed by another group of holdouts (Hawthorne holdouts HH) followed. Here HH sought to rely on the NH (NML Holdouts) interpretation of the *pari passu* clause in settlement of their outstanding claims on defaulted debt. They argued that the Republic violated the clause every time payments were made to NH and their claims remained unsettled. The SDNY denied their claims.

The court found that debtor's intention to disobey the orders of the court had changed. The debtor had by then repealed its offending "legislative enactments' and the [new] administration aimed to settle with its creditors. This is the finding that the debtor was now intending to negotiate with the holdouts and therefore obeying its orders. In other words, in the absence of evidence indicating evisceration of creditor claims, the attachment orders would not be forthcoming.

Further, 'the "combination" and "course" of conduct that formerly constituted breach of the…clause no longer exists.'[268] Here it can also be argued that the debtor's good faith conduct excludes its bad faith conduct. In addition, the court found that the '[p]laintiffs have not also alleged sufficient new conduct on behalf of the Republic to establish a breach of the [clause].'[269] On these grounds, it was held that 'the Republic is not *now*[270]' in breach of the clause.

In 2015, President Marci was elected and had stated publically "I want to be clear: we need to reach a settlement. We want to find a fair agreement". The special master "praised the Republic's leaders for their "courage and flexibility in stepping up and dealing with this long festering problem which was not of their making". Here the special master was recognising the problem as a mutual problem as opposed to one that only involved objectionable debtor conduct. This expectation that "the Republic's good faith efforts to resolve the disputes could be matched by the "strong hope" that all bondholders will accept settlement soon". This was also the view taken by the US government as expressed by the then Treasury Secretary.

In the order of Feb 19 2016, the court acknowledged that "the Republic has shown a good faith willingness to negotiate with the holdouts". The court contrasted this good faith behaviour with the prior conduct of the Republic with the finding that it "never seriously

[267] Like the NML case, the White Hawthorne case was an action seeking breach of contract damages based on non-payment of principal and interest as well as injunctive relief and money damaged for violation of the pari passu clause. See *White Hawthorne v. Argentina*, *supra* note 206 (slip op. at 2)
[268] Id at 8
[269] Id
[270] Emphasis in italics

pursued negotiations towards settlement. Instead the Republic's leadership engaged in rhetoric, calling plaintiffs "vultures" or "financial terrorists" while showing open contempt for" its rulings. The court also found that the special master could not coax the Republic to negotiate with plaintiffs in good faith in 2014 and 2015.

Though the court recognised good faith contract performance as an organising principle in the common law that eventually informed resolution of the dispute, the court however does not specify that there is a common law duty to negotiate that applies to all contracts or that this duty is necessary to facilitate just outcomes as it is in line with reasonable expectations of parties in this specific non-standard contracting context. The court also does not specify that there is a need for the recognition of such a duty that will enhance rather than detract from commercial certainty. The *Hawthorne* decision leaves gaps in the common law position in relation to good faith. This means that further incremental steps are required to make the law more coherent, just and in line with party expectations.

Hawthorne also restricts the application of the NML decision. In effect confining judicial intervention to very specific situations, though the court does not specify what these situations are. The court clarifies that the *NML* decision "does not control the interpretation of all *pari passu* clauses or the obligations of other sovereign debtors under *pari passu* clauses in other debt instruments." The NML decision would also not be automatically triggered to stop non-ratable payments. Thus the court found that a sovereign debtor does not breach its "pari passu clause every time it pays one creditor and not the other, or even every time it enacts a law disparately affecting a creditor's rights". Therefore, the court acknowledges that non-ratable payments are legitimate exercises of debtor discretion in contract performance. In addition, the court reaffirmed the observation that "Argentina's extraordinary behaviour was a violation" of the clause and found "that cases like this one are unlikely to occur in the future because Argentina has been a uniquely recalcitrant debtor". Argentina is thus recognised as an outlier though the court does not specify what conduct would trigger the NML route. When compared to NML, the Hawthorne court partially levels down to market understandings as their findings implicitly acknowledge the good faith norms that sustain cooperative behaviour (See Figure 5.3).

In a further clarification of the NML decision, the *Hawthorne* court finds that default per se is a necessary but not a sufficient condition to trigger the *pari passu* interpretation. There must be objective evidence of 'recalcitrance' over and above default. Thus the court finds that '[n]onpayment on defaulted debt alone is insufficient to show breach' of the clause. More evidence of objectively ascertained recalcitrance is required to establish a breach. In

the case *Exp-Imp. Bank of Republic of China v. Grenada* [271] where the issue of non-ratable payments was raised as well, the court re-affirmed the legal position that a sovereign debtor does not breach the clause 'every time it pays one creditor and not another, or even every time it enacts a law disparately affecting a creditor's rights.'[272] In that case the court found that these 'two facts alone fail to establish Grenada's liability.' The court was exceptionalizing the NML litigation. In the absence of a clear doctrinal test of what conduct could trigger the NML route, *Hawthorne* was an improvement on NML although many questions remain unanswered.

A reading of the decisions therefore indicates that the courts are relying on clear, objective evidence of evisceration of the kind found in CIBC. In *Hawthorne* the court implicitly affirms the view that absent such evidence, the debtor must show objective evidence of a willingness to engage in negotiations with a view to eventually settling creditor claims.[273] Absent the evidence of evisceration and the presence of an objective evidence of a good faith duty to negotiate, the exercise of contractual discretion through non-ratable payments is permissible in US law.[274] This was further affirmed by the Court of Appeal where it found that 'one creditor's interest in getting paid is not cognizably affected" by payment to another creditor.' [275] Does it follow then that in the absence of clear evidence of evisceration *combined with* objective evidence of a good faith duty to negotiate (in acknowledgment of extant contractual claims), the courts will defer to the good faith dealings of the debtor?

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[271] *Exp.-Imp. Bank of Republic of China v. Grenada*, No. 13-cv-1450, 2013 WL 4414875, at 4 (S.D.N.Y. Aug. 19, 2013). In White Hawthorne v. Argentina, the court stated that the "pleadings alleged that Grenada had paid exchange bondholders without paying holdouts and had indicated it would not pay holdouts: "Those two facts alone fail to establish Grenada's liability")". See White Hawthorne v. Argentina *supra* note 206 at 7.

[272] In White Hawthorne v. Argentina, the court stated also that "The U.S. Government, too, has maintained the position that simply paying some creditors and not others does not constitute breach. See White Hawthorne v. Argentina *supra* note 206 at 7. See also Br. for the United States as Amicus Curiae in Supp. of Reversal at 12, *NML Capital, Ltd. v. Republic of Argentina*, No. 12-105(L) (2d Cir. Apr. 4, 2012) and Br. for the United States as Amicus Curiae in Supp. of the Republic of Argentina's Pet. for Panel Reh'g 8s Reh'g En Banc, *NML Capital Ltd. v. Republic of Argentina*, No. 12-105(L) (2d Cir. Dec. 28, 2012).

[273] Provided the claims are made expeditiously and do not breach the statute of limitations as was the case in White Hawthorne

[274] This interpretation is consistent with a finding in Hawthorne where the court found the Plaintiff's theory of separate money damages for each breach of the pari passu clause to be legally unsound. Here the court found that 'even if payment to one creditor constituted breach, that act inflicts no separate monetary damage on other holders of unpaid debt. This however comes with the proviso that the debtor is engaged in evidencing a willingness to pay – fulfil its outstanding obligations.

[275] White Hawthorne case cited "*NML Capital, Ltd. v. Republic of Argentina*, 727 F.3d at 240; cf. *D.C.A. Grantor Trust v. Republic of Argentina*, 616 F. App'x 30, 32 (2d Cir. 2015) (finding that there are no "'superior' rights to property based on subjective equitable assessments of the relative fairness of paying one class of creditor or another")".

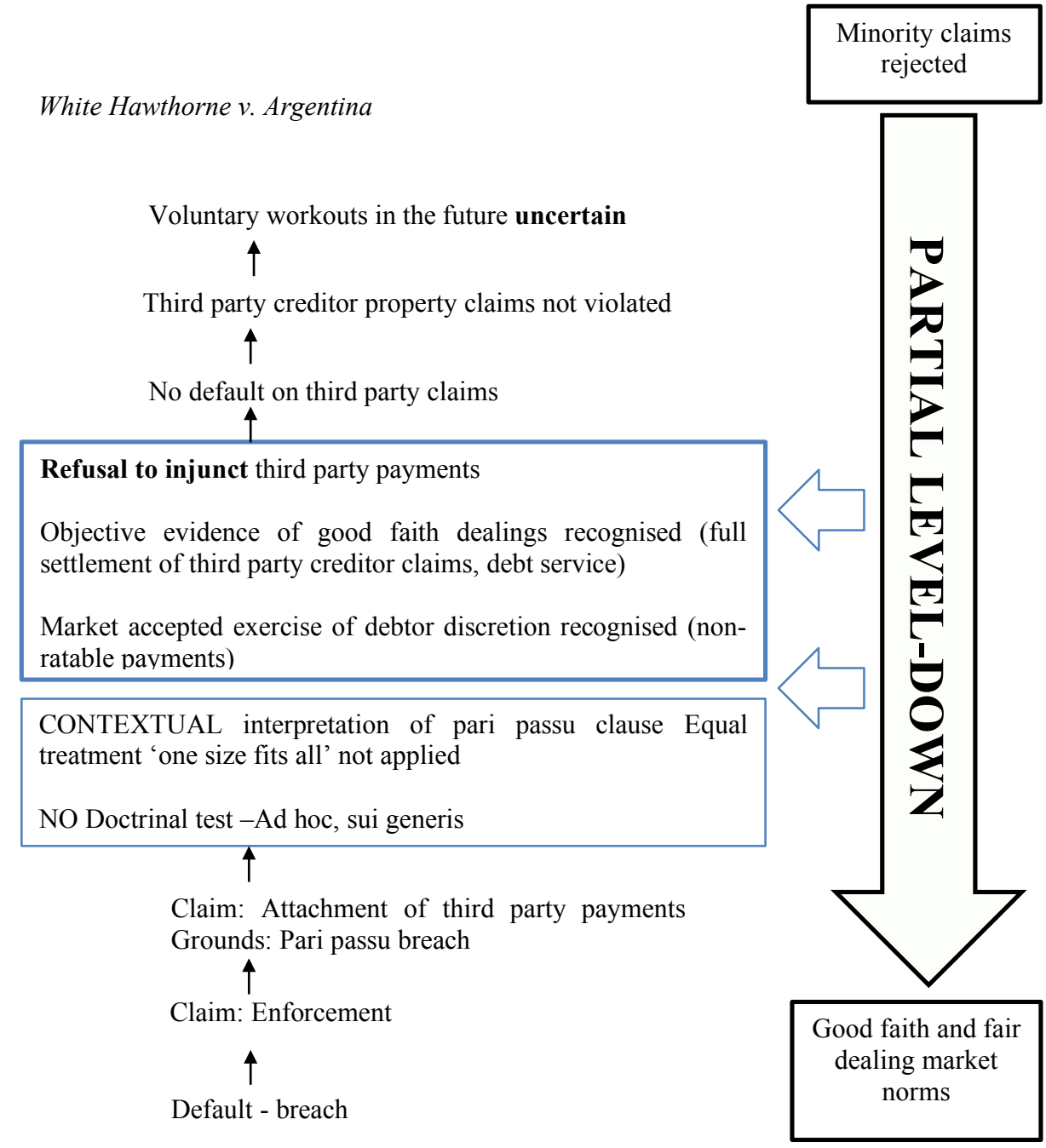


Figure 5.3 – *White Hawthorne* – Partial levelling down

However, as the courts did not specify the kinds of conduct considered as evidence of evisceration, this raises problems that may prove to be intractable and stymie debt workouts. In *Hawthorne*, the court is focussed on determining conduct relevant to assessing the intention of the debtor. Though it accepts the non-ratable payment by the debtor as legitimate

exercise of contractual discretion it does this through the lens of debtor intention. We argue that the courts do not go far enough, the decision is only partially but not fully levelled down in a manner that requires the court to defer to good faith market norms. This leaves open the possibility of judicial intervention to disrupt and stymie ongoing debt workouts. In the following sub-section, we discuss the completely levelled-down framework premised on such deference.

5.2.5.3. Alternate proposal: Complete levelling down

In the earlier sections, the *NML* decision was re-read against the backdrop of good faith and fair dealing as an organising principle in US law. It was shown that in the absence of a clear doctrinal test premised on the recognition of a general good faith duty to negotiate in all sovereign debt contracts, the *NML* decision was inconsistent, unjust and contrary to the reasonable expectations of contracting parties. In the absence of a doctrinal test that would make the common law more coherent and just, the *NML* decision will detract from commercial certainty.

The alternative proposed in this section works within the constraints imposed on debtor and creditor power. It assumes the availability of the *pari passu* ratable payments interpretation as an enforcement option. This proposal is motivated by concerns raised in the literature about the sustainability of debt workouts on account of the availability of this option in US law. The proposition developed relies on interventions by the courts in earlier decisions that prevented the disruption of debt settlements in the face of good faith actions by the debtor to renegotiate its outstanding obligations. It specifically relies on an earlier iteration of the NML litigation in 2005.[276] In this case the court deferred to the good faith actions of Argentina as it successfully renegotiated its debt obligations and refused to attach swapped bonds that were being exchanged as part of the settlement.[277] Similarly, here we propose that the court level down to good faith and fair dealing duty as market norms that facilitate cooperative behaviour and as such limit the *NML* route to instances where there is clear evidence of evisceration of contractual rights. Our template for judicial deference is supported by recommendations in the SDRM[278], the UNCTAD Roadmap[279] and the Brookings Report[280]. Each of these contains a template for judicial deference to debt

[276] See *NML Capital Ltd v. The Republic of Argentina* (13 March 2005) (S.D.N.Y 2005)
[277] See (Miller and Thomas, 2007).
[278] See (Krueger, 2001).
[279] See (UNCTAD, 2015a).
[280] See (Buchheit et al., 2013)

workouts negotiations which extends the litigation standstills that form an integral part of statutory corporate and municipal bankruptcy proceedings.

In our proposal on default enforcement, litigation will proceed to protect third party creditor claims. The courts will initially issue summary judgements. It is when the holdout creditors seek to attach payments that are flowing to third party creditors that the court is required to make a threshold determination of whether the parties are fulfilling their implied good faith and fair dealing duties. This proposal makes the case for the recognition of an implied good faith duty to negotiate that is consistent with historical evidence of successful debt restructurings, the reluctance of debtors to default and the reluctance of the courts to disrupt debt settlements. The proposal also draws on the articulation of a good faith duty in the IMF lending into arrears policy and the IIF. It offers an alternative that requires a court to ensure that attempts to trigger the NML route would have to satisfy the doctrinal threshold – thus, in the absence of objective evidence of evisceration the assumption is that the debtor is engaged in good faith negotiations with all its creditors.

As indicated in Figure 5.4, there are two options under the doctrinal test that may result. One is which the doctrinal test is satisfied and the NML route is triggered – the left side of Figure 5.4. The second option is which the doctrinal test is not satisfied and the courts defer to ongoing debt workout negotiations triggered – the right side of Figure 5.4. When the doctrinal test is not satisfied, it opens up two options. One in which all claims (holdouts and exchange bondholders) are satisfied and the other in which outstanding claims remain, this would then trigger the NML route. If in the event that there is no objective evidence of evisceration then a good faith duty to negotiate is fulfilled raising no grounds for intervention. This good faith duty once established will require the court to defer to this norm. The two options, one being that the workout settles with a majority of bondholders and the holdouts are paid as per their pending claims – consistent with historical evidence discussed earlier in this paper – and the other option being that some creditors are not settled despite successful debt workouts with the majority bondholders. In the latter option, there is evidence of evisceration and the court will find a breach of the implied good faith and fair dealing duty triggering the NML route.

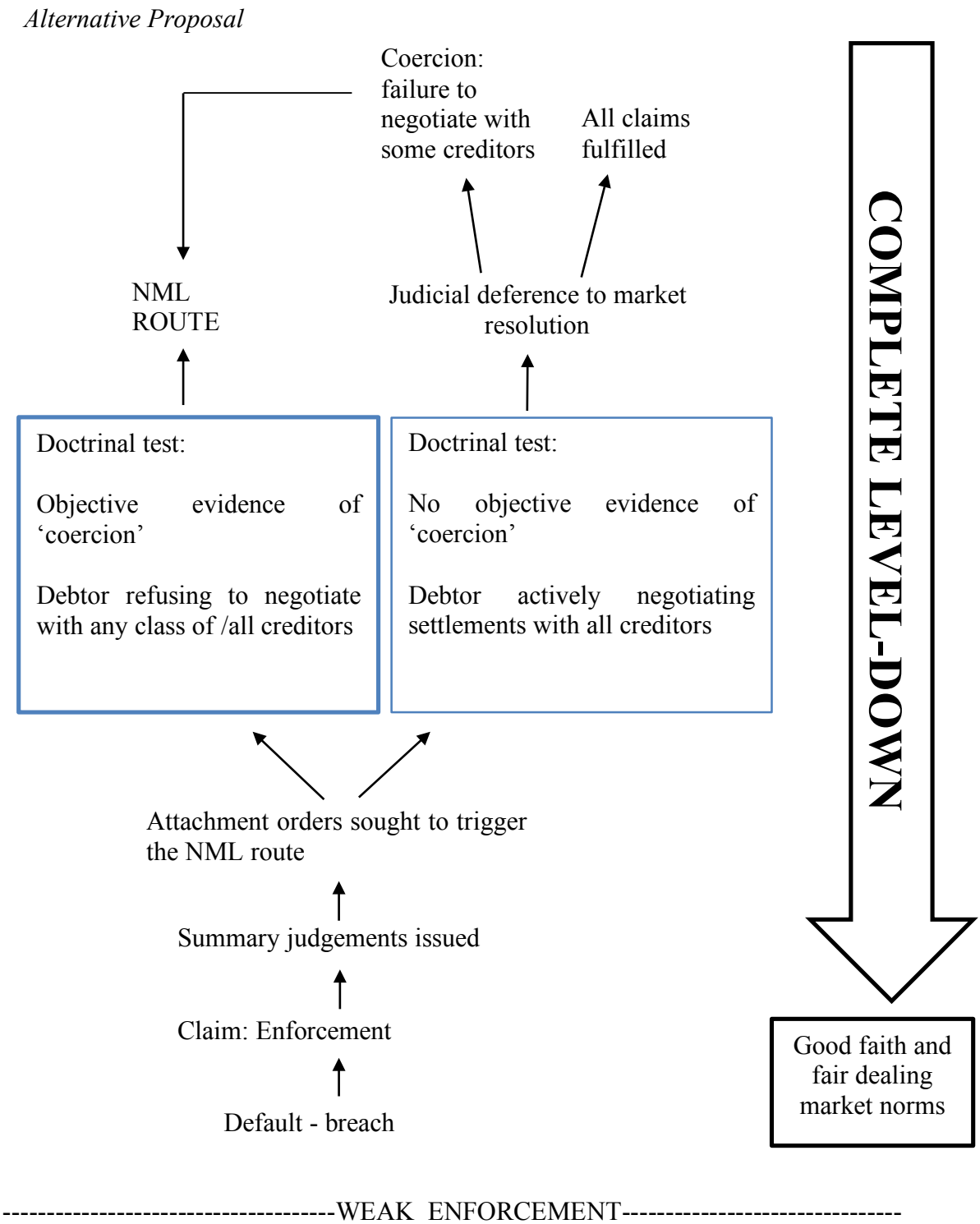


Figure 5.4 – Complete levelling down

In addition to specifying the good faith duty to negotiate that is consistent with market understandings, the proposal made here allows parties to restrict the exercise of judicial discretion in the absence of clear objective evidence of evisceration. This limits the judicial

role and follows the practice in common law courts where the exercise of judicial discretion is limited to evidence of evisceration. This proposal restores the balance between weak enforcement and the absence of bankruptcy protections necessary to facilitate consensual debt workouts. It does this to the extent that in the absence of evisceration, it proposes a template for judicial deference to ongoing debt negotiations.

Our proposition leads to the question about whether the *NML* case would have been decided differently had the court deferred to good faith market norms. The answer to that is both yes and no. If the case was levelled down and deferred to the implied duty, then the 'non-ratable' payments would not be viewed as a contractual harm but as the legitimate exercise of debtor discretion. As such the court would not have attached the payments made in good faith to third parties, but would have recognised acceleration and ordered monetary compensation to the holdouts as contractual remedies for breach.

5.2.6. Conclusions

This paper recognises that the political economy that has so far sustained debt workouts is fracturing and that courts are positioned to play a more interventionist role.[281] This paper speaks to concerns raised by scholars about the implications of the NML decision on voluntary debt workouts. Concerns include that the court's expansive role will further upset the balance that ensures debtors and creditors come to the negotiating table and thereby stymie the successful renegotiation of debtor obligations.[282] This motivates the articulation of a doctrinal threshold that requires judicial deference – to the market accepted standards of exercises of debtor discretion – rather than intervention.

In examining the applicability of the common-law duty, the paper finds there is a general consensus that good faith conduct has the potential to smoothen and facilitate sustainable debt workouts. Market understanding of good faith debtor conduct informed by contract design and official sector policies further reinforce the salience of the duty. Moreover, in the face of express clauses that require unanimous consent to modify payment terms, the historical evidence indicates that party expectations of good faith and fair dealing sustain the consensual resolution of sovereign debt crises.[283] However, the good faith criterion under

[281] Interventionist role is required particularly because of legacy debt requiring unanimous consent to debt restructuring in the likes of NML v. Argentina.

[282] There are the wider and more pressing issue of extending the exclusion of sovereigns from capital markets and diminishing the prospects of recovery and growth down the line. These are the central tenets of the IIF principles discussed above.

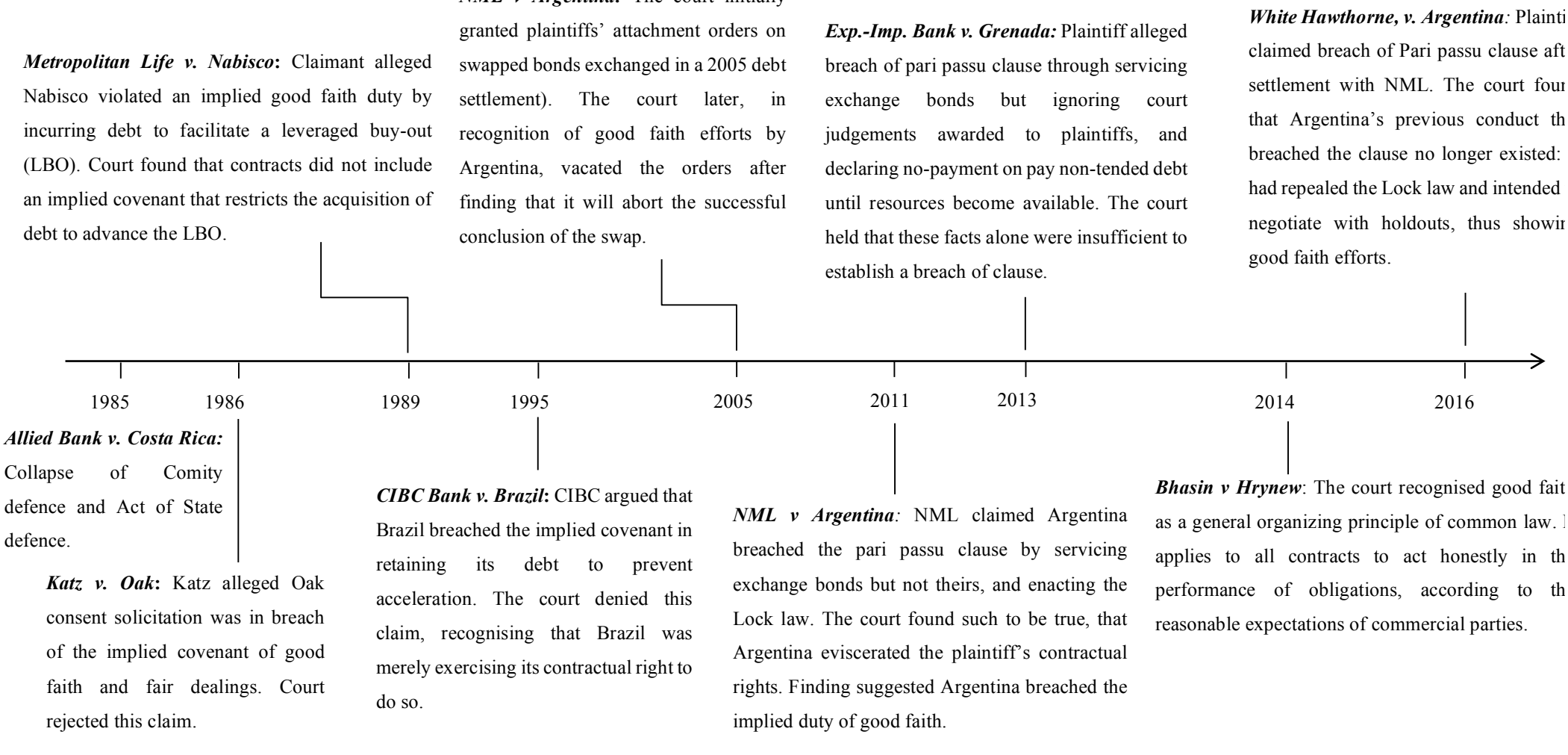
[283] See (Porzecanski, 2005, p. 326figure 4).

official frameworks remains undefined and too vague to specify types of conduct that will satisfy the good faith requirement.

This paper concludes that there is in fact a clear definition, informed by market expectations and common law, that good faith is the duty to negotiate. Justified by the high-enforcement environment created by the court injunction that ensued *NML v. Argentina*, we propose a template for judicial deference conditional on debtor satisfying a good faith duty to negotiate. Such opportunity allows the good faith market norms evolved to restrain the consequences of opportunistic behaviour and thereby facilitate successful debt workouts.

5.2.7. Appendix

Figure 5.5 - Timeline of cited cases



6. Conclusion

In the context of the current ad hoc and informal sovereign debt resolution process, there remains a strong call for further work on the redesigning of contracts and the adoption of an international bankruptcy procedure. Researchers agree that debt renegotiations are plagued with inefficiencies and there is disagreement on the expected outcomes on sovereign debt lawsuits. Though legal enforcement remains a difficult challenge for creditors, recent court decisions suggest that "a new creditor weapon has been uncloaked" (Buchheit and Gulati, 2017, p. 224): holdouts have been granted a weapon to block the sovereign from servicing creditors' bonds, who voluntarily participated in a debt restructuring, until the debtor *ratably* satisfies their claims. This has the potential to impede the achievement of the objectives of sovereign debt restructuring processes, as such strong creditor remedy will remain a possibility (Guzman, 2016). Only time will tell, intensifying the need for an international framework that can coordinate parties' ex post default to more orderly resolution process.

As long as there is no market appetite for an international law governing sovereign debt, judgement passed in one jurisdiction will remain non-binding on other jurisdictions, creating further legal incoherence and introducing different variations in legal interpretations.[284] This problem aggravates information asymmetries across parties, steering baseless optimism and biased beliefs that could have been reduced had there been a statutory or arbitration process that may coordinate parties' expectations ex-post default. This thesis has provided an account of how such problems may cause inefficiencies in debt restructuring. Without a system that provides clear rules on adjudicating claims, history – on the frustrating experiences of the economic and social costs of default – will continue to repeat itself.

This thesis not only sheds new insights into causes of observed delays in sovereign debt negotiations, but is also relevant for evaluating the effectiveness and design of policy interventions in sovereign debt markets. The joint use of both economic and legal reasoning to understand the gaps in debt restructuring architecture, its subsequent findings and suggested proposals are relevant for the continuing debate on an internationally agreed sovereign debt restructuring procedure. The thesis study of heterogeneous beliefs of court enforcement and the good faith principle are two distinct approaches in examining the pre-existing inefficiencies in the current framework.

[284] For example, a ruling from a UK judge in February 2015 clarified that English bonds with the pari passu clause were governed by English law and not New York law, putting some limits to US judicial rulings. See (Guzman and Stiglitz, 2015a).

Though it is true that sovereign debt litigation plays a key role in disciplining governments to repay (Schumacher, 2015), large magnitudes of distressed sovereign debts in today's financial markets remain attractive for vulture funds who are highly patient in litigation and optimistic of their prospects in court should the sovereign default. In addition, as noted in Stiglitz and Guzman (2014), aggressive enforcement of sovereign debt makes defaults unduly costly. With the little-to-no application of theory in modelling sovereign debt litigation dynamics, this thesis provides a stepping stone for future theoretical research in sovereign debt legal enforcement and impediments it has on debt restructuring.

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