Political Economy of Sovereign Debt Restructuring: Burden-Sharing, Haircuts, and the Creditor’s Outside Option

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Alejandro Jimenez

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Political Economy of Sovereign Debt Restructuring:
Burden-Sharing, Haircuts, and the Creditor’s Outside Option

Alejandro E. Jimenez

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Abstract

The outcome of a sovereign debt restructuring (SDR) reflects the relative bargaining power between creditors and debtors. I apply the logic of the Rubinstein (1982) bargaining model by assuming that the creditors’ opportunity cost of bargaining, or their outside option, matters for SDR outcomes. I argue that the creditor’s outside option is other financial assets and provide statistical evidence that returns on financial assets significantly predicts how creditors and debtors share the burden in a restructuring. When financial asset returns are high, creditors on average accept smaller net present value (NPV) haircuts, expressed as a percentage point reduction of the original sovereign loans. I also show this result with a simple game matrix, in which the Nash equilibrium depends on creditors weighing the post-restructuring value of the debt against the debt’s sale value multiplied by an exogenous rate of return. Additionally, I test the hypothesis proposed in Asonuma & Joo 2020 that GDP growth strengthens the outside option; GDP growth is an insignificant predictor of haircuts in a joint test with financial asset returns. I conclude that trends in global asset markets determine burden-sharing between debtors and creditors in the repayment of past loans.

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The decentralized negotiation between creditors and debtor-countries is the starting point toward understanding sovereign debt restructuring. When a sovereign debtor and creditors need new contractual terms to reach sustainable debt loads, the interests of these parties are simple: creditors would like to be fully repaid their loans, and debtors would prefer to repay as little as possible (Frieden 2015). In the absence of a governing body or supranational legal framework (Helleiner 2008), and given the sovereign immunity of debtor nations which makes legal enforcement of contracts extremely weak (Ferry 2018), creditors and debtors can only resolve the crisis through negotiation, in which each party optimizes their utilities given interdependent constraints. The most appropriate contrast agent to sovereign debt restructuring is a domestic bankruptcy regime. The United States bankruptcy court, for example, oversees not only the process of voluntary contracting between creditors and debtors (Buchheit 2018), but also creates the proper incentives to negotiation by reducing transaction costs (Schwarz 2000), including information asymmetries and administrative costs. In the world of sovereign debt restructuring, no governing judge evaluates the debtor’s financial state, assists in producing a viable plan to ensure the debtor returns to debt-servicing, nor authorizes a plan with binding power. Because of this missing piece in the international financial architecture (Kreuger 2002), and given the financial troubles of sovereign debtors (Bulow 2020), creditors and debtors must divide the pie in a zero-sum game. Self-interested parties, an anarchical restructuring regime, and a fixed pie create game-like conditions in explicit or implicit negotiations to alter the original terms of their loans.

Voluntary negotiation is the game in sovereign debt restructuring (Schwarz 2004), since sovereign debtors cannot unilaterally change the terms of their loans without experiencing high reputation and sanction costs, and creditors cannot legally enforce their claims on the sovereign
debtor’s assets. Thus, sovereign debtors, who would like to retain future financing, and creditors, who would like to maximize the return in their portfolios, negotiate a new contract in game-like conditions. The debtor-state has strong incentives to offer a proposal to restructure their loans, but also has the option, at least in theory, to repudiate the debt (Williamson 1986). Individual creditors or their representative committees choose to accept or reject a restructuring proposal. If they reject, they can coerce the creditor through litigation, sanctions and holding out (Bulow 2020) or amicably sponsor a different set of terms. The level of cooperativeness between creditors and debtors in a restructuring varies greatly; some negotiations obtain participation of creditors and debtors painlessly, while others experience problems.

Once financial troubles ensue, the debt agreement is open to new terms, and both parties act strategically to maximize their share of the pie. A debt crisis may compel creditors and debtors to negotiate terms that would help the debtor-country return to financial health. However, any adjustment to the maturity schedule, interest rate or face value of sovereign loans creates a distribution of burden between creditors and debtors. These adjustments, also known as haircuts, are reductions in the net present value of sovereign loans to creditors expressed as a percentage reduction of the original loan. For instance, a 20% haircut on a $100 bond is worth $80 in net present value terms. A higher haircut places a larger burden of adjustment on creditors, while a smaller haircut places a larger burden of adjustment on debtors. Creditors are reluctant to give haircuts, even if a haircut in the short-term helps the debtor reach sustainable debt loads and preserves asset values. The burden-sharing between the developed and developing world is a longstanding question in international political economy because advanced economies tend to host the creditors and emerging economies tend to be borrowers.
In this paper, I will explore the exogenous factors which affect the bargaining outcomes of sovereign debt restructurings. Specifically, what determines the burden-sharing between creditors and debtors in modern sovereign debt restructurings? Since sovereign debt is tied to political processes, the haircut which creditors and debtors negotiate in a restructuring cannot be viewed, as per conventional wisdom (Dvorkin 2021), as simply a reflection of financial ratios and macroeconomic fundamentals, including capital flows, external financing dependence, and the country’s total indebtedness relative to assets. The distribution of the burden of adjustment is a function of relative bargaining power. A sovereign’s ability to pay its debts is—in theory—100%, since the sovereign can mobilize the full wealth of its citizenry through taxation and contractionary economic policy. Such a move, however, is extremely painful to the sovereign nation. Likewise, although it would be costly, creditors can realize full losses on their loans. There is a balance of the burden of adjustment where the opportunity cost of settlement for creditors and debtors is in equilibrium.

I assume that given the game-like conditions in sovereign-debt workouts, the outcome of restructurings reflects the relative bargaining power of creditors vis-à-vis debtors as each act strategically to minimize their pain in a new contract. I apply the logic of the Rubinstein bargaining model to sovereign debt workouts to highlight the importance of the outside option in negotiated outcomes. I argue that the strength of one party’s bargaining power in negotiations is determined by the credibility of an outside alternative to the creditor-debtor relationship (Frieden 1). I argue that the outside option of creditors is other financial assets, excluding the distressed loans to the debtor-country. To test whether creditors’ outside option vis-à-vis a sovereign debtor is other financial assets, I investigate a relationship between nominal returns in asset markets and the realized haircuts in a restructuring. Higher returns in asset markets should lower the haircut
creditors accept by raising the opportunity cost of writing-off the debt and investing the money in a risk-adjusted portfolio of assets. I explore corollaries to this hypothesis, including how the outside option is stronger or weaker because of creditor and debtor characteristics. In conclusion, I present theoretical and empirical evidence that the creditor’s outside option matters in negotiation outcomes. Asset returns have a negative, statistically and economically significant relationship with haircuts. Equivalently, there is a positive relationship with asset returns and the post-restructuring value of the debt. Therefore, asset markets in developed economies not only affect the sovereign debtor’s future cost of borrowing but also the burden-sharing between creditors and debtors in restructuring past debt obligations.

Only one paper has theorized on the creditor’s outside option in sovereign debt restructuring as a financial opportunity cost. Asonuma and Joo (2020) hypothesize that “foreign creditors’ business cycle” as measured by Gross Domestic Product (GDP) is a proxy for the creditor’s alternative in sovereign debt restructurings (p. 2394). These authors assert that restructurings are settled with smaller haircuts when creditors experience high GDP growth in their home country. In their model, creditors decide whether to complete a proposed exchange—which would realize a haircut on the debt—by comparing the utility value of the restructured debt and GDP. They assume that GDP growth is a proxy for changes in creditor’s income. Therefore, when GDP growth is high, creditors will expect their high income to persist and will demand higher recovery rates. Although Asonuma and Joo’s discussion on the mechanics of the outside option is apt, I argue that financial assets, not GDP, determines a creditor’s income. Historical evidence suggests that GDP growth and the returns on financial assets are not necessarily positively correlated (MSCI 2010). Therefore, another objective of this paper is to
test the significance of creditor GDP growth alongside financial asset returns in predicting haircuts in sovereign debt restructuring.

**Literature Review**

The sovereign debt restructuring (SDR) literature in economics and political science is extensive, especially revolving around the theoretical problem of sovereign debt restructuring: why do debtors repay their sovereign loans and why do lenders lend? The literature is dominated by two models to solve this question. Pioneered by Eaton and Gersovitz (1981), the most common solution to this fundamental problem is the debtors’ reputation for repayment. The key rational is that sovereigns want to maintain their standing of good credit to ensure future access to funds by private markets (Kolb 2011). These funds enable debtors to smooth their consumption when output is volatile. In later work, John Eaton (1996) presents a model that sovereigns repay to “give creditors reason to think that the debtor will suffer adverse consequences if it defaults.” The reputation approach alone has limitations, and others emphasize that sanctions work together with reputational motivations to ensure debt repayment (Kolb 2011). Rogoff & Burlow (1988) emphasize that legal and direct sanctions outside of the borrowing relationship are also necessary structural underpinnings to prevent a less-developed country (LDC) from defaulting, not just reputation alone. According to this punishment approach, creditors have legal rights to interfere with trade credits, make future borrowing more difficult, and threaten to seize foreign assets (Rogoff 2015). In either case, the sovereign debtor’s decision to repay is motivated by their future ability to borrow and the high costs of repudiation, either through direct sanctions or reputation alone. Therefore, there have been few outright repudiations of debt in modern history (Williamson 1986).
Another set of literature takes the problems of modern sovereign debt restructuring as given and focuses on the opportunities for reform. This literature responds to the current framework: no international bankruptcy regime to enforce contracts. This literature highlights the problems of debt restructuring today, including collective action problems, delays and litigation (Bulow 2015). Creditor holdouts and free riding are well-known phenomenon in SDR; creditors choose to not participate in a restructuring in hopes of being repaid a higher value of their debt than other creditors, often through litigation. The Argentine debt restructurings of the past decade and Eurozone Crisis have been two dramatic episodes riddled with these legal issues. The existence of problems provides opportunity for reform, from changing domestic contract law, as presented by Charles Schwarcz (2000), to establishing a sovereign debt restructuring mechanism, as proposed by the IMF (Krueger 2000). The United Nations also hopes to strengthen the framework through international treaties. Other proposed solutions are solely market-based, like the adoption of collective-action clauses (CACs) to lower the threshold of creditors to reach a negotiated agreement.

Furthermore, sovereign debt restructuring is a natural application for game theory, especially to explain the problems that exist in the current debt workout system. Pitchford and Wright (2013) theorize that delays arise because individual creditors hold-up a restructuring to extract more payments from sovereigns. But they do not discuss by which mechanism creditors are able to hold-up restructurings, and why the level of cooperation and delay varies between restructurings. Ghosal, Miller, and Thampanishvong (2019) present an explanation for the variation in delays. In a model of incomplete information, they rationalize that longer delay is a signal to creditors that debt loads are unsustainable, and they need a larger haircut. While this
model offers a sound explanation for the variation in haircuts, there is no discussion of creditors’ and debtors’ outside options, which is standard in negotiation theory.

Therefore, there are opportunities to enrich the study of sovereign debt with a theoretical and empirical analysis of their relative bargaining power through the lens of the outside option. Jeffry Frieden (2015) theorizes on how the burden-sharing between creditors and debtors is a function of their credible alternatives. He writes:

“Standard bargaining approaches point out that effective bargaining power is largely a function of how attractive is each protagonist’s exit option. The party better able to make a credible commitment to find an alternative to the debtor-creditor relationship in which it finds itself is better able to drive a hard bargain with the other (p. 6).”

Frieden contrasts the Great Depression-era bargaining, in which debtors received favorable terms from debtors, with the series of debt crises during the 1980s that coincided with vibrant financial markets, in which debtors bore a disproportionally high portion of the burden. He attributes this discrepancy to the relative costliness of leaving the creditor-debtor relationship for each party. These historical episodes support the argument that there is an opportunity cost of bargaining, also known as the outside option; implicit in Frieden’s comparison of these two time periods is that the financial condition around the creditor-debtor relationship is relevant to the outcome of the restructuring. In other words, the alternative to negotiating a new deal is the foregone profits available in financial markets if creditors accept the restructuring proposal. Frieden’s argument provides a theoretical basis for deeper exploration of the relationship between financial asset markets and the burden-sharing between creditors and debtors.

In general, few have explored variation in the bargaining outcomes of restructurings, as measured by haircuts, especially in the study of international political economy (DiGiuseppe 2018). One example is Sovereign Debt Restructurings: Delays in Renegotiations and Risk Averse Creditors. In this paper, Asonuma and Joo argue that the creditor’s outside option is GDP, which
is a proxy for creditors’ income, and they provide a multi-period negotiation model for the relationship between net present value of haircuts and GDP growth. They theorize that the outside option is the utility value associated with postponing settlement (p. 2396). In a series of regressions, they find a negative correlation between GDP growth rates and haircuts to conclude that creditors who experience higher GDP growth in their home country accept lower haircuts. Asunoma and Joo (2020) construct a dataset of creditor committee chairs and the GDP growth rates in their home countries at the time of those restructurings. This paper is one-of-a-kind in trying to quantify the financial outside option of creditors in a restructuring. However, although GDP growth rates might matter, a more direct proxy for the outside option of creditors is the profit from putting their investments elsewhere. There is an opportunity to test whether financial asset returns, rather than GDP growth, determines the bargaining power of creditors. Further, Asonuma and Joo’s analysis doesn’t explore variation in strength of the outside option. There are opportunities to explore the factors that may discount or raise the value of the creditor’s alternative to a debt restructuring.

**Theory**

The contribution of game theory to explain the outcomes of the debt-workout process is well-established (Pitchford 2013). Nash (1951) describes an explicit bargaining game in which two parties make offers and counteroffers to divide a fixed pie, accepting or rejecting, until they reach an equilibrium. A sequential bargaining game like the one proposed by Nash can be likened to sovereign debt restructuring. Creditors and debtors interact to divide the burden of adjustment in a new contract once the original contract is no longer viable. These debt contracts are assets of measurable value; for creditors, they represent real returns on principal, and for
debtors, they represent access to financing to smooth domestic consumption. These restructurings involve past debt issued by the sovereign. The difference in net present value between the original contract and the contract following a restructuring makes up the total burden of adjustment, which creditors and debtors likely share to some extent. Larger reductions in the net present value are a relative burden to creditors, while smaller reductions place a larger burden on debtor-nations. For creditors, adjustment realizes losses in their portfolio of assets, while adjustment for debtors implements costly economic policy reforms, including austerity programs (Gerodimos 2015). In a bargaining game, creditors and sovereign debtors propose distributions of the burden of adjustment until one party accepts.

The Rubinstein model is the canonical model of sequential bargaining, and has important implications for sovereign debt restructuring. In a 1982 paper, Ariel Rubinstein proposes a model of back-and-forth bargaining over an infinite time horizon and a discount factor, thereby removing unrealistic arbitrary cutoffs proposed by some Nash specifications (p. 98). Seeking to understand which pareto-optimal, individual-rational agreement two parties will reach to partition a fixed pie, Rubinstein finds a single solution, in which $C$ represents bargaining cost:

In the fixed bargaining cost model, it turns out that if $C_1 > C_2$, 1 receives $C_2$ only. If $C_1 < C_2$, 1 receives all the pie. If $C_1 = C_2$, any partition of the pie from which 1 receives at least $C_1$ is a perfect equilibrium partition (P.E.P.). In other words, a weaker player gets almost “nothing;” he can at most get the loss which his opponent incurs during one bargaining round.

One central conclusion of Rubinstein’s model is that relative bargaining costs are outcome-determinative of the distribution of the pie. The party with lower bargaining costs receive greater portions. What are the bargaining costs in Rubinstein’s model? The opportunity cost of bargaining is the utility derived from discontinuing negotiations and turning to a default option.

Sometimes called the outside option or exit option, the costs of bargaining determine which party
extracts a more favorable agreement (Spaniel 2015). Conversely, the party with the weaker exit option must concede larger slices of the pie to reach an agreement with the counterparty (McClellan 2020). This result is intuitive and relevant to sovereign debt restructuring. Creditors with a stronger alternative to the sovereign loans can negotiate an agreement that excises a lower burden of adjustment.

I propose that one such alternative to a negotiated agreement for creditors of sovereign debt is other financial assets, including worldwide company equities and fixed-income securities. The opportunity cost of bargaining to a creditor is the value derived from terminating negotiations and investing in a combination of risk-free Treasury Bills and stocks. A creditor’s portfolio is likely exposed across multiple asset classes, sectors, and geographies. Creditors’ portfolios are indifferent to the source of their returns; holding their risk profile constant, when returns are higher and the loaning business booms, creditors are more likely to sell their sovereign loans and claim a capital loss tax deduction. When considering accepting a sovereign’s restructuring proposal, profit-maximizing creditors implicitly compare the ex-ante value of restructured sovereign loans against the sale value of the debt multiplied by the risk-adjusted expected return in financial asset markets. However, unless creditors adopt new search-for-yield strategies (Surti 2021), returns to asset classes are determined exogenously by the market. Thus, the strength of their alternative to the distressed sovereign loans depends on exogenous returns from all other financial assets available to them. If there are high returns in the market, the sovereign debtor must accept smaller haircuts and, therefore, a larger portion of the burden of adjustment.

Why would other financial assets be an alternative for creditors, and why would it affect the substance of negotiations during a restructuring? A better deal is always better for creditors
but obtaining the better deal doesn’t come without cost. Whether a creditor holding sovereign debt is an individual, institutional investor (e.g. investment funds, pension funds, insurance companies, etc.), or commercial bank, engaging in a restructuring is costly on multiple dimensions.\textsuperscript{2} Banker time is valuable and highly specialized, and would more profitably be spent performing banker activities, especially when recent returns have been lucrative. There are administrative costs of coordination through a creditor committee and human capital costs of time and effort to negotiate with the sovereign and its financial and legal advisors. Goodwill is also at stake; hard bargaining could produce reputation costs which reduces the long-term value of the creditor-debtor relationship.\textsuperscript{3} Not only is securing a higher haircut more costly to creditors, but there are decreasing marginal returns to effort in getting a lower haircut. Meanwhile, creditors have already realized capital losses; the lost value on their sovereign loans are sunk costs. Because the full value of these loans cannot be recovered, the creditors disregard the loss in determining the next steps for their portfolio. They have the option to write-off the loans, sell the loans to a third party, and reallocate monies to other financial assets with relatively low transaction costs.

Meanwhile, sovereign debtors have a relatively low opportunity cost of bargaining. A successful restructuring is impactful on the sovereign’s future ability to borrow (Eaton 1981). Even in a direct sanctions model, countries have “an incentive to settle old debts as a prelude to borrowing again (Rogoff 2015).” Future access to funds, or the new money provided by creditors to finance future government consumption, is a primary motive for the debtor to reach a settlement. These funds are critical to the operation of massive state-owned enterprises, social

\textsuperscript{2} Even in a bond restructuring, investment banks act as the representatives of bondholders, since they initially marketed the bonds to investors, and face the same opportunity costs to negotiations as commercial banks.
\textsuperscript{3} Sovereign debtors are inclined to avoid securing future debt with hardline creditors who do not grant reasonable relief.
welfare programs, and government agencies. Although the sovereign has the option to repudiate, or refuse to honor its sovereign debt obligations, losing access to funds in the future is extremely costly, even compared to present gains from not repaying. Because sovereign debtors like to fund their future consumption through borrowing, they generally choose to participate in bilateral negotiations to restructure their current debt. The sovereign debtor secures a threshold of creditor participation in the restructuring by preparing proposals of new terms (Buchheit 2018), which include reductions in the face value of the debt, maturity extensions, and changes to coupon payments. When creditors agree to the haircut, the debt is restructured.

Therefore, the creditors’ alternative, rather than a debtor’s alternative, ultimately determines the outcome of a restructuring. My central argument is that the haircut in a restructuring comes down to the creditors’ comparison of the net present value of the debt given the haircut and the market value of the debt times the rate of return of financial assets. Because repudiation is more often very costly, sovereigns choose to restructure and must propose a haircut. However, they cannot propose a haircut—at least one that would lead to a successful restructuring—below the market value of the debt times the rate of return, because in this case the creditors would rather write-off the debt and invest elsewhere. Furthermore, creditors with access to high rates of return outside their relationship with the debtor-country will demand lower reductions in the net present value of their loans, ceteris paribus, to accept a negotiated agreement. As a result, a larger burden of adjustment falls on sovereign debtors. On average and holding all else constant, the sovereign debtor will have to implement more painful policy measures, including spending cuts and raising taxes, to stabilize their economic situation and repay their debts.

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4 Any combination of new terms comprises a haircut, expressed as a percentage-point reduction of the original loan; there doesn’t need to be an explicit face value reduction to reduce the nominal value of the bonds.
The mechanics of this result can be modeled in a simplistic, sequential game of creditors and debtors’ exit options. Consider a two-period model with one representative creditor and sovereign debtor. In response to a debt crisis, the sovereign must restructure and has a current obligation to the creditor of $D_1$ due in period 1, which includes principal and all coupon payments. The creditor also has a pool of money, which can either finance the future deficit of the sovereign debtor $D_2$ or purchase the outside option—a risk-adjusted portfolio of stocks and bonds. Any losses from $D_1$ are sunk costs to the creditor. Assuming a reputation-based model of repayment, only if a restructuring is secured in period 1 will the sovereign debtor receive the full value of $D_2$ from the creditor in period 2. I also assume that the value of $D_2$ is greater than the value of $D_1$ and that any successfully negotiated restructuring has a guaranteed maturity at the end of period 1. The sovereign-debtor has two options: restructure or repudiate the debt. Because sovereign debtors cannot be forced to repay, if the sovereign repudiates the debt, the creditor’s decision to restructure or write-off is inconsequential. If the sovereign chooses to restructure, it must propose a percentage haircut between 0 and 1, which would lower the net present value of the debt obligation $D_1$ to $D_h$, or $D_1$ multiplied by $(1 - \text{Haircut})$. The creditor also has two options in this game: 1) participate in restructuring $D_1$, and therefore accept the implicit haircut $D_h$ proposed by the sovereign debtor, or 2) write-off the debt by selling the loans to a third-party,

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5 This game matrix shows the creditor and debtors’ decisions. This model is by no means a dynamic model.
in which the creditor would receive the market value of the debt $D_m$, and invest in a combination of stocks and bonds. The payoffs of this game are shown in Figure 1.

![Figure 1: Decisions and payoffs of a representative creditor and sovereign debtor](image)

The model shows an algebraic relationship between returns on financial assets $r$ and the haircut which creditors accept in a restructuring; while the debtor always chooses to restructure, the creditor is indifferent between restructuring and writing-off the debt as long as the following holds true: $D_h = D_m (1 + r)$, or the post-restructuring debt value is equal to the debt's sale value to a third party multiplied by some exogenous rate of return. Therefore, the rate of return in asset markets exogenously shifts the level of $D_h$ which makes the creditor indifferent between their two options. Because the sovereign debtor values future credit, the sovereign debtor generally
chooses to restructure, unless $D_1$ is extremely high relative to $D_2$. The debtor also prefers that the creditor would restructure, because they lose some value of $D_2$ when the creditor writes-off the debt; $a$ is some positive discount rate, which could be considered a risk premium charged to the debtor or economic losses for not securing a restructuring. The highest possible payoff for the creditor, however, depends on the haircut which the sovereign debtor proposes. If $D_m(1 + r) > D_h$, the creditor prefers to sell the debt at the market rate and invest those funds in a pool of other financial assets which the creditor expects to yield some level returns by the end of period 1. If $D_m(1 + r) < D_h$, the creditor agrees to the restructuring and receives $D_h$ and finances the debtor’s future borrowing. Aware that the creditor will always choose the higher payoff between $D_m(1 + r)$ and $D_h$, the debtor must propose a higher value of $D_h$ as financial asset returns increase.

This game tree shows the essence of the creditor’s outside option in sovereign debt restructuring. Access to financing tomorrow shapes the sovereign-debtor’s negotiation behavior today. Once a country begins to rely on borrowing from international capital markets, and they must roll over their debt, the sovereign debtor will always offer proposals to continue repaying with the highest possible haircut. The creditor doesn’t accept a proposal until the new debt would be as profitable as their other potential business activities. In the real world, negotiations are an iterated game, creditors are numerous, and the debtor may offer many proposals. The creditor may not strategically negotiate, but creditors will certainly write-off their sovereign loans and sell to new creditors if the restructuring proposal does not compare to their alternative in asset markets. As such, sovereigns cannot obtain creditor participation until the proposed haircut makes the new debt equally valuable as comparable assets. This is the theoretical justification for a negative correlation between haircuts and rates of return to stocks and bonds.
Multiple corollaries follow from this conclusion. First, if the availability of high-yield securities in the market strengthens a creditor’s bargaining power, then it logically follows that those creditors with more liberty to invest in different asset classes will have a stronger outside option relative to other creditors. This may help explain why bondholders—who have extremely liquid access to capital markets—drive a harder bargain with sovereign-debtors, evident in several recent bond restructurings. Argentina’s 2005 restructuring was marked by legal disputes with creditor holdouts that persisted more than a decade later (Hornbeck 2010). The cooperation problems in negotiations to restructure Argentina’s debt, stemming from higher bondholder demands on repayment, have had adverse effects on Argentina’s real economy up to today. The differences in negotiation behavior between bondholders and commercial banks is widely recognized by academics and professional economists (Kreuger 2002). In *A New Approach to Sovereign Debt Restructuring*, Former IMF managing director Ann Krueger claims that there are more cooperation problems in bond restructurings compared to restructuring traditional syndicated loans. Krueger points to the diffusion of creditors with smaller liabilities and fewer incentives to maintain good relations. While more creditors will exacerbate collective action problems, the causal channel may not only be the number of creditors, but also their elevated access to investments with higher returns. Copelovitch (2010) points to the tendency of bondholders to search for yield more aggressively across borders and therefore have short-term relationships with their borrowers:

“For a number of reasons, coordination problems are much more severe for bondholders than for commercial bank lenders […] large, heterogeneous groups of bondholders rarely have long-standing relationships with a particular borrowing country or with each other; rather, they frequently move their investments across borders in search of the highest rate of return (p.)”
Severe coordination problems may be explained by the stronger ability of bondholders to rebalance their portfolios once sovereign loans sour. While regulatory agencies restrict a commercial bank’s holdings to syndicated loans and fixed-income securities, bondholders and investment funds have additional access to equity markets and alternative investments in a wide diversity of geographies and sectors. Because of the risk involved, their investment activities have the potential for higher returns. The investment management industry is also extremely performance-based compared to commercial banking. Bondholders can drive a harder bargain with sovereign debtors and accept lower haircuts because they have a higher opportunity cost to settlement. Therefore, I hypothesize that bondholders have a stronger outside option relative to more constrained creditors. They should bear a lower burden of adjustment relative to commercial banks in a restructuring. Evidence from recent restructurings held up by bond-holding investment funds and individual bondholders suggests this may be the case. As sovereign debt transitions from syndicated loans held by commercial banks to bonds held by investment institutions, we might expect the incidence of less-than-cooperative restructurings to increase (Rogoff 2020).

In general, the outside option may be strengthened or weakened by anything that changes a creditor’s ability to reallocate their assets to securities with higher returns. For instance, as noted by Krueger, Copelovitch, and others, commercial banks have direct profit incentives to maintain good relationships with sovereigns. This lowers their incentives to push a larger share of the burden of adjustment onto debtors. Creditors may be restricted in leveraging their outside option because of long-standing economic partnerships with deficit countries, as measured by the

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6 Of course, investment banks who sponsor the sovereign loans also have incentives to retain good reputations as brokers, but they do not hold the debt themselves and tend to have more one-off relationships with clients; their risk in a sovereign debt restructuring is limited compared to a commercial bank.
flow of goods, services and investment between the two countries. The fact that creditors, especially commercial banks, have strong relationships with some countries reflects these patterns of trade. Bank-sovereign relationships are largely regional, like US creditors with Latin America, European creditors with Africa, and Japanese banks with Asia, and closely reflect the economic closeness of two countries. A former colony or a next-door neighbor, for instance, is likely a strong trade partner, and international borrowing between the two countries tracks their balance of trade flows. Although major international players in sovereign debt markets are long-standing lenders in certain regions, they still lend outside of those regions to other countries. This provides an excellent case study on whether creditors use their outside option to drive a harder bargain with some creditors and not others. These long-standing bank-sovereign relationships might mitigate the creditor’s ability to respond to higher returns in other financial markets. As noted in the sovereign debt restructuring literature, economic proximity may make bargaining more costly, thereby weakening the outside option of creditors and increasing the level of haircuts creditors are willing to accept in a restructuring.

Further, the outside option may be constrained by the regulatory and political environment in which the creditor operates. Until this point, I have ignored the influence of international institutions like the International Monetary Fund (IMF) that have developed as the primary ad-hoc machinery to facilitate sovereign debt restructuring (Rieffel 2003). The IMF works in consultation with sovereign debtors and creditors to stabilize access to private markets, largely by engaging with private and sovereign stakeholders, alleviating short-term liquidity problems, and advising actors on returning to debt sustainability. This role is not entirely technocratic. There is evidence that the IMF, as an international lender, holds stronger preferences and exhibits more leniency toward sovereign countries holding concentrated loans
from the private banks of the IMF’s largest shareholders—United States, Japan, Germany, the UK and France (Copelovitch 2010). When private banks and financial institutions from these countries are more heavily exposed to distressed sovereign debt, sovereign countries can extract more favorable terms in IMF loan contracts. These loans protect their investments by preventing short-term balance of payments problems that would reduce their asset values even further. In this way, the IMF works to protect the interests of foreign private creditors who lend to sovereign countries.

I hypothesize the relationship may work in the opposite direction too. The initiation of an IMF program to aid a debtor nation is an implicit insurance policy on the creditors’ assets. Because the debtor is obliged to the IMF, an official loan adds credibility to a restructuring such that creditors are willing to accept a higher haircut because there is a higher chance of repayment. Because of its stated mission to restore debt sustainability, and because its loans are on the line, the IMF may exert influence over creditors to take on a larger share of the burden of adjustment and help the sovereign debtor return to regular debt servicing. Therefore, when the IMF lends to a sovereign debtor, creditors may be less responsive to the market rate of return in negotiating a restructuring. If this is the case, an IMF lending program produces a consumer surplus for both creditors and sovereign debtors; the lending facility adds a guarantee of the repayment to a creditor and pressure to settle with a higher haircut for the sovereign debtors, simultaneously helping countries reach sustainable debt loads and protecting the domestic interests of the G5 countries.
**Empirical Strategy**

In this section, I outline several equations to explore the outside option of creditors, which I hope to model with the following data. First, I identify the datasets used in my analyses. To quantify reductions in the value of the sovereign loans, I use data on haircuts from all restructurings between foreign private creditors and sovereigns from 1970 to 2010. Cristopher Trebesch and Juan Cruces in *Sovereign Defaults: The Price of Haircuts* present the first complete panel dataset of 180 restructuring cases in 68 countries. Several countries have had more than one restructuring in this forty-year period. The Trebesch and Cruces 2013 dataset records haircuts as the difference between the net present value of the old and new loans, discounted using deal-specific exit yields which incorporates both global price of credit risk and country-specific conditions (p. 86). The formula for haircuts from is as follows:

\[
Haircut_{it} = 1 - \frac{\text{Present value of new debt} \ (r_{it})}{\text{Present value of old debt} \ (r_{it})}
\]

The net present value calculation of haircuts is also preferable to explicit face value reductions because it more accurately captures the value of the debt to creditors and debtors. The data on haircuts is precise enough to extrapolate the degree of burden-sharing which creditors are willing to accept in each restructuring (Sturzenegger 2005). Therefore, I will interpret variations in haircuts as the burden-sharing between creditors and debtors. Figure 2 is a density histogram of haircuts, ranging from almost 100% to less than 0% reductions in net present value. The Trebesch dataset also records the start and end of the restructuring as well as the characteristics of instruments involved in each exchange.
Further, to measure worldwide stock market returns, I use a dataset from the MSCI World Index, which is a market-cap weighted index of 1583 stocks from 23 developed markets since the late 1970s. The MSCI Index is a common benchmark of global stock returns, even though the index does not include exposure to emerging markets. From the data, I construct the variable $Ann_{MSCI\_Returns}$, which is the lagged 12-months of MSCI index returns calculated at the end of the restructuring. As shown in Figure 3, MSCI returns experience extreme variation without a clear time-trend from 1970 to 2010. Returns on equities, as shown, can change drastically in relative short periods of time:
Additionally, I use data on the current yield of the US 1-Year Treasury Bill as the risk-free rate of return\(^7\). The United States government bond is the world investor’s standard of a risk-free asset. As a proxy for the returns on a riskier set of loans which a commercial bank or other investment firm would have on its balance sheet, I use data on Moody’s Seasoned Aaa Corporate Bond yield. I construct \texttt{Ann\_Treasury\_Yield} and \texttt{Ann\_Aaa\_Yield} as the 12-month lagged average of Treasury and Aaa corporate bond yield on the day the restructuring is completed. Figures 4 and 5 show the variation in 1-year US Treasury and corporate bond yield over the relevant time period. However, unlike MSCI returns, there are clear time trends in the returns of both assets. The nominal US yield has generally declined since the late 1980s. But I help alleviate concerns about a time trend by testing both stock and bond returns simultaneously. Finally, Asonuma and Joo 2020 code a dataset identifying the creditor chairs and co-chairs who participate in a

\(^7\) I use bond yields, but there are many ways to measure the returns of some assets. In general, a bond yield’s is considered the return which an investor realizes on that security. However, more complex calculations of a bond’s yield will account for the time value of money and reinvested coupon payments. Yield to maturity, for instance, incorporates a net present value calculation of future coupon payments. Another method which I did not use in this paper is measuring the 12-month returns on a bond index, such as the S&P 500 bond index which measures the performance of U.S. corporate debt issued by constituents of the S&P 500.
restructuring, their country of origin, and the average GDP growth rate in the country during the restructuring. I aggregate these datasets for my empirical analysis.

First, to test the outside option of creditors in sovereign debt restructuring, I will regress the net present value (NPV) of haircuts in 178 restructurings (1970 - 2010) against worldwide 12-month lagged nominal returns to equities and risk-free government bonds, using debtor-country fixed effects. This will be the basis of my paper’s analysis. As discussed, I construct a variable for the annual trailing average of world equity and bond returns (using the 12 months
prior to the end of a restructuring). Assuming investors believe that recent returns on financial assets will prevail, this lagged average represents the returns after a restructuring. Further, I do not control for inflation in this regression because creditors will decide to maximize their nominal payoffs; inflation affects the value of haircuts and asset returns equally. Finally, equation (1) models the outside option of both commercial banks and bondholders. I assume that a commercial banks’ profit depends on the growth of the private sector and the yield on government-backed, fixed-income securities and corporate bond yields. Individual bondholders and investment firms’ portfolio returns, too, come directly from equities and bonds. Thus, I run the following econometric specification:

\( NPV_{Haircut_{it}} = \beta_0 + \beta_1 Year\_Bond\_Returns_{it} + \beta_2 Year\_Stock\_Returns_{it} + \alpha_i + u_{it} \)

I include debtor-country fixed effects to control for variables that vary between sovereigns. I hypothesize \( \beta_1 \) and \( \beta_2 \) are negative, statistically significant, and economically meaningful. If so, other financial assets are the outside option of creditors in restructuring negotiations, and creditors must be compensated when asset returns are high with a post-haircut value of the debt that matches their alternative of writing-off the debt. Sovereign debtors cannot propose a haircut that would make the value of the debt lower than the creditor’s opportunity cost in asset markets.

Next, I will jointly test my hypothesis that returns on assets increase the outside option and the hypothesis presented in Asonuma and Joo 2020 that GDP growth in the creditor country strengthens the creditors’ outside option, allowing them to settle on restructurings with smaller haircuts. To do so, I modify equation (1) to include the creditor’s country GDP growth:

\[
(2) \quad NPV_{Haircut_{it}} = \beta_0 + \beta_1 Creditor\_GDP\_Growth_{it} + \beta_2 Year\_Stock\_Returns_{it} \\
+ \beta_3 Year\_Bond\_Returns_{it} + \alpha_i + Z_{it} + u_{it}
\]
In equation (2), I’m interested in $\beta_1$, $\beta_2$, and $\beta_3$, especially changes in significance, magnitude, or direction of these coefficients compared to equation (1) and the model proposed in Asonuma and Joo 2020. I hypothesize the coefficient on asset returns remains statistically significant while the coefficient on creditor GDP growth is insignificant. Consistent with intuition, this result would indicate that the creditor’s outside option is more directly tied to stocks and bonds than GDP. To construct the equation (2), I would ideally calculate $Credit\_GDP\_Growth$ using a weighted average of GDP growth rates based on the distribution of creditors and their country of origin in a restructuring. Data on creditor distribution, however, is difficult to parse, and only current distribution of creditors is accessible via the Bloomberg Terminal. Therefore, I adopt the methodology of Asonuma and Joo (2020); I assume that a creditor chair is largely representative of the pool of creditors and restrict the sample to restructurings with an appointed creditor chair. Creditor committees are formed in only a subset of observations (63% of all restructuring episodes from 1970 – 2010), and the creditor chair plays more than a symbolic role in the restructuring. The Asonuma and Joo (2020) dataset includes the country of origin of creditor committee chairs who oversee the restructurings and the corresponding GDP growth rates. $Z_{it}$ is a vector of controls specified by Asonuma and Joo, namely “GDP deviation from the trend obtained by applying a Hodrick–Prescott (H–P) filter, external debt-to-GDP ratio, export-to-debt service ratio (both at the end of restructurings), and a dummy variable for an IMF-supported program (p.).”

There are opportunities to modify equation (1) to gain a richer understanding of the factors that strengthen the outside option. For instance, I will test for non-linearity in the relationship between haircuts and financial asset returns. One theory is that potential asset performance is relevant for bargaining power only in times where returns are doing really well or
really poorly, while periods of mediocre returns have a comparatively weak effect on haircuts. Therefore, I construct indicator variables for the highest and lowest rates of return based on returns greater than the 75th percentile and lower than the 25th percentile. I interact these indicator variables with lagged 12-month stock and bond returns to measure varying strength of the outside option during these periods of asset “shocks.” I amend equation (1) to include these interaction terms:

\[
(3) \quad \text{NPV\_Haircut}_{it} \\
= \beta_0 + \beta_1 \text{Year\_Bond\_Returns}_{it} + \beta_2 \text{Year\_Stock\_Returns}_{it} \\
+ \beta_3 75p\_Returns \times \text{Year\_Stock\_Returns}_{it} + \beta_4 75p\_Bond\_Returns \\
* \text{Year\_Bond\_Returns}_{it} + \alpha_i + \epsilon_{it}
\]

\[
(4) \quad \text{NPV\_Haircut}_{it} \\
= \beta_0 + \beta_1 \text{Year\_Bond\_Returns}_{it} + \beta_2 \text{Year\_Stock\_Returns}_{it} \\
+ \beta_3 25p\_Returns \times \text{Year\_Stock\_Returns}_{it} + \beta_4 25p\_Bond\_Returns \\
* \text{Year\_Bond\_Returns}_{it} + \alpha_i + \epsilon_{it}
\]

In equations (3) and (4), statistically significant $\beta_3$ and $\beta_4$ would indicate that the intensity or “shocks” of returns on global stocks and bonds affects the bargaining of creditors and, therefore, their ability to extract lower haircuts. Periods of extremely low returns, for instance, may cause creditors to value their sovereign loans more highly. Periods of extremely high returns may cause creditors to accept the lowest possible haircut.

Furthermore, a key component in my study is how the outside option varies by creditor type, namely institutional bondholders and commercial banks. The recent trend of sovereign

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8 This hypothesis is substantiated in the theoretical literature on the outside option (Frieden 2015). In periods of economic shock, like the Market Crash of 1929, for instance, creditors granted greater relief to debtors; in periods of high growth like the Bull Market of the 1980s, creditors were able to fiercely resist haircuts on sovereign loans. But the relationship between median returns and haircuts is difficult to support anecdotally.
bond holdings displacing syndicated loans to sovereigns and the resulting complications of sovereigns to restructure their debts (Rogoff) might be observable in the data. I will analyze differences in bargaining power between creditors by testing the interaction between creditor type and asset returns on haircuts. Ideally, I would construct a variable that indicates the share of types of institutions that participate in a restructuring, namely institutional investors, individuals and commercial banks. However, since data on the distribution of creditors is limited, I am only able to distinguish whether observations are bondholder restructurings or commercial syndicated loan restructurings. I use Bond_Restruct, an indicator variable from the Trebesch Cruces 2013 dataset, to construct an interaction variable between bond restructurings and asset returns. I modify equation (1) by adding these interaction terms:

\[
NPV_{Haircut_{it}} = \beta_0 + \beta_1 Year_{Bond_{Returns_{it}}} + \beta_2 Year_{Stock_{Returns_{it}}} \\
+ \beta_3 Bond_{Restruct_{it}} + \beta_4 Year_{Stock_{Returns}} * Bond_{Restruct_{it}} \\
+ \beta_5 Year_{Stock_{Returns}} * Bond_{Restruct_{it}} + \alpha_i + u_{it}
\]

Statistically significant and economically meaningful values of \(\beta_4\) and \(\beta_5\) would indicate that the value of the outside option varies considerably between bondholders and commercial banks. I hypothesize that \(\beta_4\) and \(\beta_5\) are negative because bondholders, who likely operate in more liquid and riskier markets than commercial banks, will act opportunistically with potential returns in financial asset markets. Bondholders, whether they are hedge funds or individual investors, can rebalance assets more freely and can directly invest in assets that have higher returns than the less risky loans on a bank’s balance sheet. Therefore, I predict that in bondholder restructurings the negative relationship between haircuts and asset returns is on average higher in magnitude relative to commercial bank restructurings.
Next, I’ll explore differences in the outside option for creditors lending to sovereigns with economic ties to their home country, like US commercial banks’ lending to Latin America, and lending to countries outside their economic region. In my model, I will call this economic closeness proximity. I ideally could construct a variable that represents the share of creditors within economic proximity to the sovereign debtor based on the percent share of each country participating in a restructuring. However, since the data is unavailable, I again use Asonuma and Joo’s methodology and assume the creditor committee chair is representative of the pool of creditors. I construct an indicator variable proximity based on whether the sovereign debtor is within a creditor country’s sphere of economic influence. I interact this indicator variable with stock and bond returns. Therefore, I modify equation (1) by including these interaction terms:

\[
NPV\_Haircut_{it} = \beta_0 + \beta_1 Year\_Bond\_Returns_{it} + \beta_2 Year\_Stock\_Returns_{it} + \beta_3 Proximity_{it} + \beta_4 Year\_Stock\_Returns \times Proximity_{it} + \beta_5 Year\_Bond\_Returns \times Proximity_{it} + \alpha_t + u_{it}
\]

Statistically significant \(\beta_4\) and \(\beta_5\) would indicate that economic closeness has a mitigating effect on the bargaining power of creditors. In other words, commercial banks, because of trade flows and their strong portfolio of investments in a region, have a lower opportunity cost of bargaining in a restructuring. For instance, these creditors might face high transaction costs to readjust their exposure away from the region, have other ongoing profitable opportunities there, or risk goodwill that is important to their business. If \(\beta_4\) and \(\beta_5\) are statistically insignificant or there magnitude is unmeaningful, then the outside option is robust to geography.

Finally, I’ll analyze the effect, if any, of IMF lending programs on the bargaining power of creditors. I use an indicator variable from the Asunoma & Joo dataset which records 1 for the
presence of an IMF lending facility during the restructuring, and 0 otherwise. I interact the indicator variable with asset returns and include them in the following specification:

\[(7) \quad NPV_{Haircut_{it}} = \beta_0 + \beta_1Year_{Bond \_Returns_{it}} + \beta_2Year_{Stock \_Returns_{it}} + \beta_3IMF \_Program_{it} + \beta_4Year_{Stock \_Returns} \times IMF \_Program_{it} + \beta_5Year_{Bond \_Returns} \times IMF \_Program_{it} + \alpha_i + u_{it}\]

Statistically significant \(\beta_4\) and \(\beta_5\) would indicate that IMF participation in a restructuring does not affect the creditor’s response to their outside option. This result would be quite revelatory about the relationship between the IMF and creditors. Although the international finance literature has shown that private creditors are able to extract lower haircuts compared to official creditors like the IMF (Rogoff), this result would indicate that the IMF has some bargaining power over creditors. However, if \(\beta_4\) and \(\beta_5\) are statistically insignificant, then there is no evidence to support that the IMF has any bite to alter the balance of burden-sharing between creditors and debtors in relation to the outside option.

**Descriptive Statistics**

The data shows that restructurings in decades of higher asset returns have a lower average haircut than periods of lower returns. In the Trebesch 2013 dataset, roughly half of sovereign restructurings with private foreign creditors take place in the 1980s, a decade marked by a bull market on Wall Street and the highest real US treasury interest rates in half a century (See Figure 7). This decade of high asset returns also coincided with the Latin American debt crisis, or the wave of sovereign debt defaults in North and South America that started when Mexican Finance Minister Jesús Silva Herzog informed the United States Treasury that Mexico could no longer
service its $80 billion in debt. Besides Mexico, fifteen other countries in Latin America rescheduled their debts with foreign private creditors in this period, along with restructurings in Eastern Europe, Asia Pacific, and North Africa. During this decade of strength in asset markets, restructurings had an average haircut that was half the size of the average haircut in all other periods, as shown in Table 1. The variance of haircuts during this period of high asset returns is also much smaller compared to other decades, as shown in Figure 6. The trend is not particular to Latin America, but persists across regions of the world, as shown in Table 2; the overwhelming number of restructurings in Latin America do not bias this trend. This data suggests that sovereign debtors across the world accepted a more painful post-restructuring agreement, and creditors negotiated a lighter burden of adjustment, in the 1980s than other recent decades.

<table>
<thead>
<tr>
<th>Decade</th>
<th>Average Haircut (NPV)</th>
<th>Average US 1-Year Yield</th>
<th>Average Corp. Aaa Yield</th>
<th>Average Stock Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980s</td>
<td>25.97</td>
<td>9.99</td>
<td>11.24</td>
<td>23.77</td>
</tr>
<tr>
<td>1990s</td>
<td>49.04</td>
<td>5.99</td>
<td>7.8</td>
<td>10.8</td>
</tr>
<tr>
<td>2000s</td>
<td>55.59</td>
<td>3.32</td>
<td>6.12</td>
<td>10.16</td>
</tr>
<tr>
<td>All Years</td>
<td>37.61</td>
<td>7.76</td>
<td>9.41</td>
<td>17.64</td>
</tr>
</tbody>
</table>

*Table 1: Haircuts vs. Financial Asset Returns by Decade*

<table>
<thead>
<tr>
<th>Decade</th>
<th>Latin America</th>
<th>Africa, Asia, Middle East &amp; Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980s</td>
<td>24.00698</td>
<td>27.62</td>
</tr>
<tr>
<td>1990s</td>
<td>49.86154</td>
<td>47.35263</td>
</tr>
<tr>
<td>2000s</td>
<td>66.57143</td>
<td>40.22</td>
</tr>
<tr>
<td>All Years</td>
<td>41.20577</td>
<td>32.41944</td>
</tr>
</tbody>
</table>

*Table 2: Haircuts by Decade and Region*
Figure 6: Boxplot of Haircuts by Decade

Figure 7: Boxplot of 1-Year Treasury Yield by Decade
Further, the data suggests there is a linear trend between 12-month lagged asset returns and the burden-sharing between creditors and debtors in the new debt contracts. Figures 8, 9 and 10 show a negative correlation between the net present value of haircuts and the level of nominal returns in asset markets. In other words, when creditors experience high yield on fixed and non-fixed income asset markets, the nominal losses to creditors as a percentage of the original debt tend to be lower on average. Therefore, the negotiated outcome favors creditors when asset markets are performing well and favors sovereign debtors when returns available to creditors are low. In a side-by-side comparison, the US 1-year Treasury Yield and Aaa Corporate Bond Yield explains a larger percentage of the variance in haircuts than MSCI stock returns, as indicated by a higher $R^2$ for the simple linear regression fitted in Figure 8 and 10 than in Figure 9. While both graphs show an association, the relationship between average bond yields and haircuts is clearer.

Figure 8: Haircuts in Restructurings vs. US 1-Year Treasury Yield
Figure 9: Haircuts in Restructurings vs. MSCI 12-Month Lagged Stock Returns

Figure 10: Haircuts in Restructurings vs. Moody's Aaa Corporate Bond Yield

Empirical Results
Equation (1) shows a statistically significant negative relationship between the returns on worldwide stocks and bonds and the net present value of haircuts in sovereign debt restructurings. The results are consistent with the central hypothesis of this paper; the level of compensation which creditors demand in their new debt contracts depends on the rate of return available in financial asset markets. First, a key result is that the relationship between the 12-month lagged worldwide stock returns and haircuts is negative. The model estimates that the relationship is -0.179, or that a one-percentage point increase in the nominal rate of return on an index of worldwide stocks is associated with a 0.179 percentage point decrease in the size of haircuts. These results are also economically meaningful. The average decline in haircuts produced by a one standard deviation increase in stock returns—an increase of 20 percent—is 3.6 percentage points. In Argentina’s 2005 restructuring, a 3.6 percentage point difference is almost a $2.2 billion issue. However, the 95% confidence interval on $\beta_1$ is quite wide; the estimated coefficient is between -0.317 and -0.004. Nonetheless, the availability of higher returns in the stock market is reasonably correlated with lower reductions in the net present value of sovereign loans; based on bargaining outcomes in the data, creditors have stronger leverage to maximize their interests in altering old debt contracts when stock returns are higher.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haircut</td>
<td>Haircut</td>
</tr>
<tr>
<td>Ann_MSCI_Return</td>
<td>-0.179**</td>
<td>-0.124</td>
</tr>
<tr>
<td></td>
<td>(0.0693)</td>
<td>(0.0799)</td>
</tr>
<tr>
<td>Ann_Treasury_Yield</td>
<td>-2.630***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.931)</td>
<td></td>
</tr>
<tr>
<td>Ann_Aabond_Yield</td>
<td></td>
<td>-4.190***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.416)</td>
</tr>
<tr>
<td>Constant</td>
<td>61.17***</td>
<td>79.23***</td>
</tr>
<tr>
<td></td>
<td>(6.930)</td>
<td>(12.55)</td>
</tr>
<tr>
<td>Observations</td>
<td>176</td>
<td>176</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.223</td>
<td>0.263</td>
</tr>
</tbody>
</table>
The same negative relationship holds true for US 1-year Treasury bond yields. For a one percentage point increase in the US treasury market yield, there is a 2.6 percentage point reduction in the net present value of haircuts. The average decline in haircuts produced by a one standard deviation increase in 1-year treasury yield—an increase of 330 basis points—is 9.47 percentage points. The confidence interval of $\beta_2$ is also wide; the true estimate lies between a 4.5 and 0.8 percentage point decrease in haircuts for every one-percentage point increase in 1-Year Treasury Bond yield. I also incorporate a riskier asset to mirror the loans which creditors hold on their balance sheet: Moody’s Aaa corporate bond yield. The estimated coefficient on $Ann_{Aaabond\_Yield}$ in a separate regression with MSCI returns is -4.19. The average decline in haircuts produced by a one standard deviation increase in the Aaa corporate bond yield—an increase of 240 basis points—is 10 percentage points. The data suggests that higher bond yields give creditors bargaining power to preserve the value of their loans and push a greater share of the burden of adjustment onto sovereign debtors. For sovereign debtors to successfully engineer a restructuring proposal, they must make the settlement worthwhile for creditors by compensating them for their opportunity cost in asset markets. In sum, this model show that 1) the alternative matters for observed negotiation outcomes, 2) other financial assets are the creditor’s alternative to a restructuring agreement, and 3) higher rates of return on those assets strengthen the outside option for creditors.

Figure 11 accentuates the economic significance of these coefficients. The chart shows the difference in the haircuts between the highest 12-months and lowest 12-months of asset returns in the 40-year period. According to equation (1), haircuts on restructurings in periods of
60% global stock returns, which happened in the mid 1980s, would be on average 17 percentage points lower than in periods of -35% stock returns, which happened in September 1990. Moreover, haircuts on restructurings in periods of 16% treasury yield, as in the early 1980s, would be on average 42 percentage points lower than in the periods with treasury yields near the zero lower bound. The same holds true of corporate bonds. Haircuts on restructurings in the 12-month period of highest AAA corporate bond yield are 37 percentage points lower than in periods of lowest AAA corporate bond yield. These represent large differences in the distribution of the burden of adjustment between the extremes of asset returns.

![Differences in Haircuts between Restructurings of Highest and Lowest 12-month Lagged Returns (1970-2010) by Asset, as predicted by equation (1)](image)

Equation (2) model suggests that the relationship between creditor chair’s GDP growth and haircuts is statistically insignificant, while the relationship between worldwide asset returns and haircuts remains significant. Including relevant controls, including GDP deviation from the trend, debt-to-GDP ratio, and export-to-debt service ratio, this model jointly tests this paper’s hypothesis and the hypothesis proposed by Asonuma and Joo (2020) that GDP growth contributes to the outside option by increasing creditors’ wealth. Equation (2) estimates a
negative relationship between GDP growth in the creditor chair’s country of origin and the net present value of haircuts, but the estimated coefficients on $GDP_{Growth\_Ave}$ and $Gdp\_Growth\_End$ are not statistically different from zero. This data is consistent with my hypothesis that the strength of financial asset markets, not necessarily GDP cycles, contribute to a creditor’s opportunity cost of settlement. This result is intuitive, since the income of commercial banks, financial institutions and individual bondholders is more directly linked to the rates of return on US treasuries and stocks than the GDP growth in their home country. A bank’s business activities, for instance, may be uncorrelated with GDP. Importantly, because neither the direction, magnitude nor significance of $ann\_msci\_return$ and $ann\_treasury\_average$ change in equation (2) compared to model (1), GDP growth in the creditor chair’s country of origin is not confounding the relationship between asset returns and haircuts. The number of observations drops in equation 2 because I use Asonuma and Joo’s dataset, which identifies the chairs for restructurings in which creditors form a committee. Because not all restructurings have a creditor committee, only a subset of all restructurings between 1970 and 2010 will identify the GDP growth in the creditors’ country of origin.

<table>
<thead>
<tr>
<th>VARIABLES</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Haircut</td>
<td></td>
</tr>
<tr>
<td>$ann_treasury_average$</td>
<td>-1.617**</td>
</tr>
<tr>
<td></td>
<td>(0.660)</td>
</tr>
<tr>
<td>$ann_msci_return$</td>
<td>-0.214**</td>
</tr>
<tr>
<td></td>
<td>(0.0954)</td>
</tr>
<tr>
<td>$Creditor_Chair_GDP_growth_End$</td>
<td>-1.033</td>
</tr>
<tr>
<td></td>
<td>(1.209)</td>
</tr>
<tr>
<td>$Creditor_Chair_GDP_growth_Ave$</td>
<td>-0.234</td>
</tr>
<tr>
<td></td>
<td>(1.384)</td>
</tr>
<tr>
<td>Constant</td>
<td>51.85***</td>
</tr>
<tr>
<td></td>
<td>(8.819)</td>
</tr>
<tr>
<td>Observations</td>
<td>98</td>
</tr>
<tr>
<td>Number of countryid</td>
<td>31</td>
</tr>
</tbody>
</table>
Equations (3) and (4) indicate that higher or lower asset returns from any baseline—not just extremely high or low rates—impact the creditor’s bargaining position vis-à-vis the sovereign debtor. The models indicate that the relationships between asset returns and haircuts do not vary significantly from the average in the highest and lowest quartiles of stock and bond returns during restructurings from 1970 to 2010. \( p_{25\_msci} \) and \( p_{25\_treasury} \) are indicator variables for the restructurings in the lower quartile of worldwide stock and US 1-year treasury returns, respectively. Similarly, \( p_{75\_msci} \) and \( p_{75\_treasury} \) indicate that restructurings occur in the higher quartile of asset returns. When included with \( \text{ann\_msci\_return} \) and \( \text{ann\_treasury\_average} \) to predict haircuts, the coefficients on these indicator variables are not statistically significantly from zero. Thus, there is no evidence to suggest that the relationship between haircuts and stock and bond returns is non-linear. The relationship found in Equation (1) is not merely picking up the effect of negative and positive shocks in the stock and bond markets.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(3) Haircut</th>
<th>(4) Haircut</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{ann_msci_return} )</td>
<td>-0.245***</td>
<td>-0.103</td>
</tr>
<tr>
<td></td>
<td>(0.0892)</td>
<td>(0.131)</td>
</tr>
<tr>
<td>( \text{ann_treasury_average} )</td>
<td>-2.719**</td>
<td>-1.883</td>
</tr>
<tr>
<td></td>
<td>(1.030)</td>
<td>(1.201)</td>
</tr>
<tr>
<td>( \text{low_returns_ann_msci} )</td>
<td>0.301</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.314)</td>
<td></td>
</tr>
<tr>
<td>( \text{low_returns_ann_treasury} )</td>
<td>-0.476</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.298)</td>
<td></td>
</tr>
<tr>
<td>( \text{high_returns_ann_msci} )</td>
<td></td>
<td>-0.0667***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.109)</td>
</tr>
<tr>
<td>( \text{high_returns_ann_treasury} )</td>
<td></td>
<td>-0.581</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.511)</td>
</tr>
<tr>
<td>( \text{Constant} )</td>
<td>64.13***</td>
<td>56.47***</td>
</tr>
<tr>
<td></td>
<td>(8.917)</td>
<td>(8.409)</td>
</tr>
</tbody>
</table>
Equation (5) provides inconclusive evidence for the hypothesis that the value of the exit option varies by creditor type, namely commercial banks or bondholders. As the theory would predict, equation (6) estimates that the coefficient on Bond_restruct is negative, indicating that sovereign restructurings with bondholders on average have lower reductions in the original value of the debt. However, the coefficients on the interaction terms between Bond_restruct and asset returns are not statistically different from zero and the 95% confidence interval covers a wide range. Current data contains a very limited sample of bond exchanges—only 18 between 1970 and 2010. Future bond restructurings between sovereigns and foreign private creditors will provide an opportunity for further research on the issue of the outside option by creditor type. For now, we assume that bondholders and commercial banks respond to returns in financial asset markets in similar ways. There is no evidence to suggest that bargaining power varies between bondholders and commercial banks.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(5) Haircut</th>
</tr>
</thead>
<tbody>
<tr>
<td>ann_msci_return</td>
<td>-0.210***</td>
</tr>
<tr>
<td></td>
<td>(0.0715)</td>
</tr>
<tr>
<td>ann_treasury_average</td>
<td>-2.880***</td>
</tr>
<tr>
<td></td>
<td>(0.951)</td>
</tr>
<tr>
<td>Bond_restruct</td>
<td>-17.98</td>
</tr>
<tr>
<td></td>
<td>(16.62)</td>
</tr>
<tr>
<td>Bond_restruct_ann_msci</td>
<td>0.160</td>
</tr>
<tr>
<td></td>
<td>(0.208)</td>
</tr>
<tr>
<td>Bond_restruct_ann_treasury</td>
<td>3.807</td>
</tr>
<tr>
<td></td>
<td>(2.869)</td>
</tr>
<tr>
<td>Constant</td>
<td>63.80***</td>
</tr>
</tbody>
</table>
Observations 176  
Number of countryid 69  
R-squared 0.247  
Debtor Country FE YES  

Robust standard errors in parentheses  
*** p<0.01, ** p<0.05, * p<0.1

Equation (6) shows that the effect of 12-month rolling stock and bond returns on haircuts does not depend on the historical geopolitical and economic ties between the sovereign debtor and the country in which the creditor bases its loaning operations. By mapping the historical claims of political, economic or cultural exclusivity between countries, I construct an indicator variable named proximity, a binary variable indicating whether the sovereign debtor has been in a creditor chair’s country’s sphere of influence, economic or otherwise. I add interaction terms of proximity with ann_msci_return and ann_treasury_average to equation (1). While the coefficient on proximity is statistically significant, and quite large, the coefficients on these interaction terms are neither statistically nor economically significant. This model provides no evidence to support the hypothesis that geographic economic relationships weaken the creditor’s ability to respond to the outside option. While the baseline haircut differs by economic proximity, I cannot conclude that creditors have a weaker response to their alternative in restructurings with economically close sovereign debtors.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ann_msci_return</td>
<td>-0.174***</td>
</tr>
<tr>
<td>ann_treasury_average</td>
<td>-0.850</td>
</tr>
<tr>
<td>proximity</td>
<td>30.01***</td>
</tr>
<tr>
<td>proximity_ann_msci_return</td>
<td>-0.0980</td>
</tr>
</tbody>
</table>
Relatedly, equation (7) provides inconclusive evidence on whether IMF lending to a sovereign debtor strengthens or weakens the creditor’s leverage in exercising the outside option. The literature notes that G5 governments—also the 5 largest creditor countries—respond to the debt exposure of their domestic creditors in awarding IMF loans to sovereigns (Copelovitch 2010). This model tests whether the inverse is true—creditors respond to IMF lending in valuing their outside options because of political pressure or otherwise. I construct interaction terms between a dummy variable for whether an IMF program was approved and financial asset returns. However, the coefficients on these interaction terms are not statistically significant from zero, and their estimated values are not economically meaningful. This model does not provide evidence that foreign private creditors respond to IMF lending practices in valuing the utility of their outside option.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ann_msci_return</td>
<td>-0.183*</td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
</tr>
<tr>
<td>ann_treasury_average</td>
<td>-2.440**</td>
</tr>
<tr>
<td></td>
<td>(1.022)</td>
</tr>
<tr>
<td>IMF_Program_Start</td>
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<tr>
<td></td>
<td>(13.07)</td>
</tr>
<tr>
<td>IMF_ann_msci_return</td>
<td>-0.0135</td>
</tr>
<tr>
<td></td>
<td>(0.177)</td>
</tr>
</tbody>
</table>
Summary

This paper has shown both theoretical and empirical evidence that creditors have an outside option in sovereign debt restructuring, and the outside option has at least a meaningful impact on bargaining outcomes, if not very determinant of those outcomes. The lens of game theory illuminates the creditors’ decision in their relationship with the sovereign debtor: compare the value of the post-haircut debt with the sale price of the debt multiplied by a rate of return. In a simple model of outside options, I arrive at a result in which sovereign debtors are more often constrained by the creditor’s outside option. Because sovereign debtors would like to secure new money to finance their future consumption, they will persistently pursue a restructuring equilibrium, while creditors only care about asset returns and are otherwise indifferent between their options. Also, because getting the lowest possible haircut experiences decreasing marginal returns to effort, creditors are willing to exercise their outside option rather than just drive the hardest bargain in negotiations. In an iterated game, creditors will continuously write-off the debt as long as the haircut proposed by the sovereign debtor makes the write-off value greater than the restructured value of the debt. The write-off value of the debt depends on the rate of return \( r \).

There may be turnover in the pool of creditors because some will choose to write-off, but any creditor holding the sovereign debt will have the same value function. My model shows a direct
relationship with the rate of returns in asset markets and the post-restructuring value of the debt. Because creditors believe that recent returns predict future returns to an extent, the strength of their outside option depends on the recent returns in asset markets.

The empirical evidence suggests returns on stocks, treasury bills, and corporate bonds have a statistically significant and economically meaningful negative effect on the level of haircuts which creditors accept in a restructuring. Although not an exhaustive list, these financial assets are representative of the kinds of profitable opportunities creditors can pursue in their portfolios of loans. Although commercial banks cannot invest directly in equities, stock market returns are a close proxy for the expected returns on bank lending that increases a bank’s wealth. 1-year Treasury yield is among the safe rate of return available to a commercial bank, while corporate bonds yields are a proxy for riskier loans. Bondholders, especially if they are investment institutions with liquid access to capital, may directly invest across all these assets and more. The models show a negative relationship between haircuts and financial asset returns, or a positive relationship between the post-restructuring value of the debt and financial asset returns. Using sovereign-debtor fixed effects, the null hypothesis can be rejected at the 95% level that these estimated relationships are due to random chance alone. Above all, the coefficients are large enough to support the theory that the creditor’s exit option is writing-off the debt and investing in other financial assets, and the payoff of exercising this option depends on the rate of returns in asset markets. Additionally, empirical evidence does not suggest that GDP growth is a proxy for changes to a creditors’ wealth, as hypothesized by Asonuma & Joo 2020. When I test creditor’s GDP growth jointly with financial asset returns using debtor country fixed effects, the coefficient on GDP growth is statistically insignificant in predicting haircuts while the coefficients on stock and bond returns remain on the same order of magnitude and statistically
significant. Variation in asset returns from 1970 to 2010 has a real effect on creditors’ bargaining power.

This finding is relevant to long-standing questions in economics and political science about burden-sharing between deficit countries and surplus countries. Specifically, how do creditors maximize their share of the pie, and conversely minimize their pain, even at the expense of the debtor’s long-term economic health? Evidence suggests that the creditor’s power over the sovereign debtor lies in their ability—and their incentives—to more freely exit their relationship relative to sovereign debtors. In other words, the outside option is often more attractive for creditors. As discussed, motivated by being able to borrow in the future, sovereign debtors will mostly choose to restructure. Recent cases in which countries have entirely repudiated their debt are rare (Williamson 1986). Thus, the equilibrium haircut mostly depends on the creditors. Although the sovereign debtor has the power to freely propose the haircut, there is a minimum viable haircut for a successful restructuring. Sovereign debtors will continuously propose lower haircuts until creditors are sufficiently compensated to participate. Through their more credible outside option, the pool of creditors controls the outcome of negotiations. Sovereign debtors, although they have sovereign immunity from coercion, are not completely autonomous bargaining actors.

This model implies that sovereign debtors are at the mercy of trends in financial markets, including growth of the private sector, liquidity of commercial banks and financial institutions, and regulation on holding and investment activities, during a restructuring. In general, very liquid, high growth periods make the creditor’s outside option more attractive compared to illiquid, low growth periods. A key implication of this finding is that the modern financial system is highly intertwined in the real economies who participate in it; what happens in asset
markets in developed countries has a tangible impact on developing countries who borrow from foreign private creditors. Empirical evidence from this paper suggests that outcomes of restructurings are perhaps more linked to the global economy than previously understood. Financial integration, or the deepening cross-border linkages created by international capital markets, simultaneously expands debtors’ access to borrowing and makes them vulnerable to the macroeconomic trends in developed markets. For instance, interest rate policy and long-term equilibrium rates in the United States have real consequences on the burden-sharing between creditors and debtors when they restructure past debt obligations. The secular trend of declining long-term nominal interest rates, or the returns on bonds to investors, has shifted bargaining power in favor of sovereign debtors, holding all other asset returns constant. This decline in asset returns has coincided with higher haircuts, as previously shown in Table 1. If US bond yields remain in long-run decline, sovereign debtors will benefit from the creditors’ weakening outside option in restructurings. Creditors will demand less compensation in the new debt contracts compared to high interest-rate periods.

Therefore, not only do trends in asset markets affect the sovereign’s cost of borrowing in the future, but also their ability to handle past debt obligations. Holding other asset returns constant, in low interest rate environments, sovereigns can accumulate very large debt burdens and restructure with a lower burden of adjustment. In high interest rate environments, sovereigns who restructure simultaneously face higher costs of borrowing on new debt and a greater burden on paying back their old debt. This larger burden on debtors requires a stronger austerity policy response, or more pain for the sovereign’s citizens who bear the burden of adjustment. A larger burden on debtors might also entail greater involvement from the IMF to help the sovereign reach sustainable debt loads. Today, as noted by Kenneth Rogoff and Carmen Reinhart (2020),
middle-income emerging markets have accumulated much larger foreign currency debts in response to the Covid-19 pandemic as governments have helped their citizens and businesses weather the economic fallout. Rogoff and Reinhart write, “Amid massive and synchronous financing needs across a broad swath of countries, there is brewing in the background a growing need for debt restructurings in numbers not seen since the debt crisis of the 1980s (p. 13).” Consistent with concerns in the international financial community (Burlow 2020), developed countries’ central bank decisions on monetary policy will significantly affect both future borrowing costs and the restructuring outcomes, depressing or propping-up emerging markets’ economies.

Furthermore, in this paper, I have argued and provided evidence that the recovery value of sovereign debt to creditors is a negotiation equilibrium. As such, the outcomes of a restructuring are not simply a function of macroeconomic fundamentals but of the bargaining power of creditors and debtors. Sovereign debt restructuring is different from personal or even corporate restructuring, in which there is a relatively fixed recovery value of the creditors’ claims. Through the appropriate austerity measures, sovereigns could theoretically repay 100% of their debts, and creditors can likewise take complete losses in their portfolio. However, for either party, the cost of doing so is extremely painful. Countries facing a debt crisis must cut government spending and raise taxes on its citizens. Creditors with high exposure to a sovereign’s debt may be pushed toward insolvency. The haircut, therefore, may be viewed as a distribution of economic pain between the creditor and debtor in equilibrium. The creditors and debtors typically share the pain but would like to push as much of it as possible onto the other. Understanding the outcomes of restructurings as negotiation equilibria is key in efforts to reform the international financial architecture. Any effort to implement reform, from the creation of a
sovereign debt restructuring mechanism (SDRM) to market oriented solutions such as CACs, should be mindful of their effect on the balance of bargaining power between creditors and debtors. Any proposed solution will have distributive effects, which in part define its political feasibility.

The results of this paper open further questions regarding how the outside option varies by creditor and third-party characteristics. Although equation (5) did not yield statistically significant results, bondholders may still have a stronger outside option than their creditor peers. Because bondholders’ potential portfolio of assets is wider and more liquid, they demand lower reductions in the face value of their debt in a restructuring. As recent evidence and academic commentary suggests, holding constant recent developments in the use of CACs, bondholder restructurings are on average less cooperative. Recent bondholder restructurings on Argentine and Greek debt are salient examples. For instance, when Argentina entered a debt crisis in 2001 and defaulted on over $80 billion USD in sovereign bonds, several creditors wrote-off the debt by selling on the secondary market. Financial institutions like NML Capital purchased the Argentine bonds and litigated for the full face-value. These holdout bondholders won injunctive relief in United States District and Appeals Court, forcing the government of Argentina to simultaneously repay the re-negotiated bonds and the old bonds to the holdout creditors. The average haircut from this debt crisis is lower compared to a counterfactual in which Argentina’s creditors are commercial banks. In this paper, I did not find evidence with a simple indicator variable for a bondholder restructuring that there is significant variation in the outside option between commercial banks and bondholders. However, haircuts in the Trebesch dataset are calculated for successful bond exchanges; the calculations do not incorporate any non-restructured debt from creditor holdouts, as in the case of Argentina’s restructuring. The
“average haircut” is missing from this analysis and is an avenue for further inquiry. Further study is required to determine, as theory predicts, that bondholders have a stronger outside option compared to other creditors.

Further, while economic closeness between two countries may have an impact on the negotiated haircut, there is no evidence to suggest that these ties weaken the creditor’s outside option. Therefore, the alternative of creditors is not influenced by regional effects, a proxy for the flow of goods, people, services and capital between two countries. This suggests that creditors do not discount the minimum value of debt which matches their potential returns in asset markets for a “preferred” set of debtors. Even if the creditor has a strong business relationship with the debtor, the creditor’s response to returns in asset markets is statistically the same for all sovereign debtors. This supports the conclusion that creditors are indifferent to the source of their return in weighing the payoffs of a restructuring versus writing off the debt. However, a more enriching study might incorporate the volume of trade flows between two countries at the time of restructuring as a proxy for economic closeness, rather than purely regional effects. This new model would more accurately capture the preferred creditor-debtor relationship that might exist in sovereign debt restructuring.

Similarly, there is no evidence to suggest that IMF lending to a sovereign debtor weakens the ability of the creditor to leverage their outside option. In other words, an IMF lending facility does not mitigate the pursuit of their alternative by exerting any real pressure on creditors. Despite third-party involvement of an official creditor, creditors robustly respond to opportunities in the overall market in their decisions to write-off the debt. Political influence from the G5 to protect domestic creditors’ interest with IMF loan programs does not simultaneously lower the burden of sovereign debtors. However, I use a simple binary indicator
variable for an IMF lending program, which makes for a weaker experiment compared to a continuous variable. A subject of further analysis is whether the interaction between IMF loan size and financial asset returns is statistically significant in predicting haircuts. More intense preferential treatment of a sovereign debtor by the IMF—as reflected in larger loans size—may change the creditor’s value function because the IMF exerts more pressure on creditors to discount their outside option.

There are some potential extensions to my methodology. First, I use returns on financial assets as a proxy for the vibrancy of financial markets. One might argue that liquidity—or the volume of buying and selling activity in an asset market—and returns both determine the attractiveness and ease of exercising the outside option; creditors trying to invest in other financial assets need liquid markets to easily sell their sovereign loans to a third party. Without ready demand, creditors may need to mark-down the value of their loans to find a suitable buyer. This lowers the value of their outside option, or the opportunity cost of bargaining. Creditors are willing to accept higher haircuts on the margins when liquidity is lower in the market. The combination of asset liquidity and returns might help make sense of two historic episodes in financial history: the Great Depression and the 1980s. As Frieden (2015) notes, “virtually every debtor country defaulted on its debts” during the Depression-era, “and eventually received very favorable terms from creditors (p. 6).” Liquidity was constrained and returns fell drastically. In contrast, financial markets were hot in the 1980s, and creditors emerged from the debt crises relatively unscathed because of sovereign debtors’ “weaker bargaining position” (Frieden 2015). Testing the significant of liquidity in asset markets would corroborate the theory I present in this paper. Although liquidity and returns might have associations, liquidity alone might help explain some of the variation of haircuts.
Finally, one might expand the sample of financial assets that might be representative of the creditor’s outside option. For instance, the MSCI global stock index is not exposed to emerging market equities which are generally riskier than developed market equities. I attempt to account for a spectrum of risk in equation (1) by testing US corporate bond yields, equities, and US 1-year Treasury Bills. However, all these assets are either entirely or heavily exposed to the United States. Although US financial assets returns are highly correlated with the rest of the world, and international creditors disproportionately hold US assets, a more geographically diverse set of assets might represent the outside option of a worldwide pool of creditors. Also, limited access to data on the identity of creditors in a restructuring inhibits our understanding of how the composition of holders of sovereign debt affects restructurings. As more data becomes available, we might undertake a more rigorous analysis of the outside option.

**Conclusion**

In this paper, I have argued that the creditor’s outside option in sovereign debt restructuring negotiations is other financial assets. To test this hypothesis, I have explored the relationship between financial asset returns and haircuts in restructurings from 1970 to 2010. I present a game tree matrix to model the creditors and sovereign debtors’ decisions and payoffs. This game tree shows a proportional mathematical relationship between returns in asset markets and the post-restructuring value of the debt. The combination of the sovereign debtor’s desire for a restructuring equilibrium, motivated by access to future financing, and the creditor’s ability to easily write-off the debt and invest outside of the creditor-debtor relationship causes the sovereign debtor to propose a haircut high enough to compensate the creditors for their opportunity cost in asset markets. The data is available to perform this study. Returns in asset
markets have experienced significant variation in the past 40 years, and there have been 180 restructurings between private foreign creditors and sovereign nations between 1970 and 2010. Because there are statistically and economically significant associations between global stock, US Treasury and corporate bond returns and haircuts, there is evidence to support this hypothesis. The desire to restructure constrains the sovereign debtor’s bargaining power vis-à-vis creditors.

In general, the availability of data on haircuts, and the precision of their calculation which makes them comparable, can open more study into burden-sharing between creditors and debtors. Other independent variables may predict the distribution of the burden of adjustment once a debtor enters a debt crisis. The political science and economics literature has explored this burden-sharing dynamic very little, and few have explicitly examined the outside option of creditors or sovereign debtors as a determinant of this burden-sharing. While I investigated financial considerations, I did not use political variables to predict haircuts as some others have done (Ferry 2019). Because sovereign debt restructuring involves both private markets and political will, a combination of political and economic variables gives more holistic insight into the subject. While I have explored the creditors’ financial outside option, sovereign debtors too have political weapons to increase their bargaining power and lower their pain in a post-restructuring agreement (Frieden). Exploring the derivative of the outside option is also valuable, as I have done by examining how the outside option varies under certain conditions. For instance, under which circumstances do creditors discount their outside option? Does the outside option remain robust to exogenous factors? Understanding the haircut as a reflection of the distribution of the burden of adjustment will yield these avenues for further research.
References


