

Sovereign Theft: Theory and Evidence about Sovereign Default and Expropriation*

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VERY VERY PRELIMINARY AND INCOMPLETE!

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Abstract

This paper examines the relationship between default on sovereign borrowing and the expropriation of foreign direct investment in both theory and in practice.

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INTRODUCTION

Investments, by their very nature, involve an expenditure of resources today in expectation of future repayment. As such, all investments, whether in physical capital, human capital or intellectual property, are subject to *political risk*: the risk that some government will take actions – ranging from actions that indirectly affect the ability to make payments all the way through taxation to outright default, expropriation and nationalization – that reduce those future payments. This risk is particularly severe in the case of *foreign* investments where the absence of supranational court system limits legal remedies, and where an investors foreign nationality limits redress through a country’s domestic political institutions. In this paper we compare and contrast the impact of the most extreme forms of political risk – expropriation, nationalization and default, which we refer to collectively as *sovereign theft* – on the two most important forms of foreign investment – sovereign debt and foreign direct investment – using a mixture of empirical and theoretical approaches.

We begin by examining recent trends in the form of international investment in developing countries. Using data from a variety of modern sources, we establish that the well known trend for developing countries to expand their gross liability positions has also been accompanied by a smaller trend towards larger net liability positions. At the same time, the source of these funds has shifted away from creditor governments and supranational institutions towards the private sector. Conversely, there has been a non-monotonic change in the sectoral composition of borrowers. In the late 1970s and early 1980s, government borrowers in developing economies increased their international liabilities faster than did private sector agents, resulting in a decline in the importance of foreign direct investment. However, this trend has been unwound in the recent period with foreign direct investments increasing substantially, along with portfolio equity liabilities.

The shifting composition of international liabilities of developing countries might have been expected to have an impact on the likelihood and forms of sovereign theft. We next turn to a study of the incidence of sovereign theft over the past Century extending earlier work that documents expropriations in the latter half of the Twentieth Century to cover the first part of that Century. Using these new data, we find a tendency for expropriations and defaults to have occurred in waves, albeit waves that are not well synchronized with each other.

The asynchronicity of expropriation and default waves suggests that the incentives of countries to repay debts and honor private sector equity contracts are decoupled: if the incentives were linked, and in particular if there will spillovers in punishments, one might have expected defaults and expropriations to occur together. We consequently next turn to a review of the theoretical literature on default and expropriation with a view to discerning other lessons that can be drawn from these data. One recent strand of this literature has emphasized the trade off between defaults and expropriations out of necessity, when economic conditions are bad, and expropriations out of opportunism, when economic conditions are good. We then develop several versions of these models, including some that are new, in order to explore the importance of these trade-offs under different assumptions about the degree of risk in contracts, risk aversion in a country, and the specific nature of punishments for default and/or expropriation.

The rest of this paper is organized as follows. Section Two presents a selective survey of the existing theoretical literature on sovereign theft, which is then synthesized through a series of models in Section Three. Section Four then examines the data on different forms of foreign investments, with a view to isolating patterns over time, across countries, and within countries across sectors that might be useful in discriminating between the theories. In Section Five we present, and analyze, our new data on sovereign theft, which combines data on sovereign defaults and expro-

priations of direct investment from existing sources, with new evidence drawn from a review of both primary and secondary sources. Section Six concludes, while an appendix provides further information on our data sources and methods. References to the existing literature on default and expropriation, in both theory and practice, are discussed throughout the text.

THEORETICAL PERSPECTIVES ON DEFAULT AND EXPROPRIATION

At a superficial level, a default on sovereign debt looks much the same as an expropriation of private direct investments. Indeed, the decision of a country to default on its debts or expropriate foreign direct investment on its soil must be based on a similar calculation of the benefits of an act of sovereign theft, in terms of the extra resources obtained, versus its costs, in terms of a loss of credit market access, as well as a host of potential legal and diplomatic penalties. Nonetheless, debt and equity are different claims, and the ability and willingness of disgruntled creditors to enforce punishments for acts of sovereign theft may plausibly vary by the type of instrument considered. In this section, we provide a non-technical review of the theoretical literature which has examined the incentives of countries to engage in sovereign theft. In the following section we provide a more technical analysis of these issues, and write down a suite of models that we have found helpful in thinking about sovereign theft.

The Benefits of Sovereign Theft: Debt vs Equity as Contingent Claims

When economists talk about debt and equity, they typically have in mind very simple contracts. When thinking about debt, economists typically think of a contract that specifies a fixed return to the investor ex post, as long as the contract is

honored. When thinking about equity and direct investment, economists typically think of a contract that specifies a return that is proportional to (that is, a fixed share of) the profits from the enterprise. In practice, both debt and equity contracts come in a host of varieties; many debt contracts end up looking like quasi-equity. This is particular true in the case of international bonds, which may be issued in different currencies and at different maturities, indexed to inflation, and in some cases may even contain components which lead to returns that vary with commodity prices or the gross domestic product of the economy (for example, the Brady bonds of Mexico and Bulgaria, or the recent restructured bonds of Argentina). Nonetheless, it is useful to first examine the simplest debt and equity contracts as benchmarks for thinking about more complicated contracts.

First, consider a simple debt contract which specifies a constant return (in terms of resources) that is independent of the state of the project for which the funds were used, or the state of the economy in the developing country. If the developing country values resources in some states of the economy more than in others, then the country will gain the most by defaulting in those states of the world where its value of resources is highest. For example, during a recession or downturn in the economy, tax revenues are often low, and residents of the country often place a higher burden on the welfare state. This suggests that, with a simple debt contract, countries should be most tempted to default when output is low.

The situation is somewhat different with an equity contract. Suppose that the project that was financed with the direct investment has returns that are perfectly correlated with the state of the economy. An equity contract specifies that a constant share of profits be paid to the investor. As a result, when the economy is in a downturn, investors are paid less than when the economy is in a boom. The decision to expropriate is then determined by a trade-off between two forces. If the country places a very high value on resources in recessions, they may still be most tempted to

expropriate in recessions even though returns to foreign investors are lowest at this time. On the other hand, if the country values resources in recessions about the same as it values resources in booms, then the country will be most tempted to expropriate in a boom when the return to investors (and hence the amount that is gained from an expropriation) is highest. Cole and English (1993) term this a trade-off between “desperation” and “opportunism”.

When we turn to the more formal analysis below, we will examine the factors that determine this trade-off and we will show that a key determinant will be the extent to which the country values a smooth stream of resources, or in other words, the country's aversion to risk.

The Benefits of Sovereign Theft: Long Run Considerations

In general, the benefits of an act of sovereign theft extend beyond the exact period in which the act of sovereign theft occurs: with a complete default on a debt contract, the country also gains any future interest and principal repayments that were specified to have occurred in the future; with a complete expropriation, the country appropriates the entire future stream of revenues that would otherwise have gone to the foreign investor. However, equity investment, and in particular direct investment, differs from debt in one important respect: it is typically associated with some transfer of control over the operations of the project. Moreover, this control is usually linked to the transfer of other “goods” or “assets” (broadly defined) or factors of production from the investor to the country.

Some of these assets are presumably transferred irrevocably: once the domestic workforce has been trained to operate the project, they can continue to do so long after the direct investor has departed. In this case, the future gains from an expropriation will be large. Some goods and factor inputs, however, must be transferred repeatedly.

For example, if the foreign investor is a multinational company, the project may require inputs which are produced by some other arm of the same multinational. Alternatively, the management of the project may require managerial inputs which are vested in foreign employees. With factors of production that must be transferred repeatedly, an expropriation may lead to a significant loss in the value of the project if the foreign investor denies access to these factors, and if the factors must be not be available from other sources.¹

When we turn to the more formal analysis below, we will incorporate these considerations by making the future benefits to repayment of equity (or equivalently, the future costs of expropriation) larger than the future benefits associated with repaying debt.

The Costs of Sovereign Theft: Loss of Credit Market Access

So far we have considered the main benefit to the country of engaging in sovereign theft: the country gains access to a greater level of resources today and in the future by taking resources that would have otherwise been paid to foreign investors. Obviously, if there were no costs to engaging in sovereign theft, countries would always default on their debts and expropriate foreign direct investments, and hence we would never observe any foreign investments of any type in practice. There is a great deal of disagreement as to the exact form and severity of the costs of sovereign theft. Indeed, some authors have posed this as a puzzle: why do we ever observe foreign investments in practice?

The oldest and most widely accepted answer to this question was first advanced, in the context of sovereign borrowing, by Eaton and Gersovitz (1981) who argued

¹This argument has been made in various forms by many authors, including Eaton and Gersovitz (1984), Thomas and Worrall (1994), and Albuquerque (2003).

that the primary motivation for countries to repay their debts is to preserve access to credit markets in the future. This is typically modeled in the context of a repeated game in which the act of default is deterred by a threat of permanent exclusion from credit markets in the future. It is also often referred to as a “reputation” based motive for repayment, although as we will see below the term reputation is also used to describe a somewhat different motivation for repayment of debts. Loss of credit market access as a motivation for honoring international contracts was also applied to the study of expropriation by Cole and English (1983, 1984) and Albuquerque (2002).

A commonly heard criticism of this view of repayment incentives is that the threat of permanent exclusion may not be credible. After all, if a country is excluded from capital markets, potential gains from trade are being left unexploited. As a result, creditors other than the party that was directly affected by the act of sovereign theft might be tempted to trade with the country and thus undermine any punishment for sovereign theft. This view received its first formal expression in the work of Bulow and Rogoff (1989) who showed that it was only necessary that other financial market participants be available to accept deposits from developing countries in order to undermine exclusion from credit markets as a punishment: intuitively, a country could take its repayments on foreign liabilities and reinvest them with foreign financial institutions in such a way as to duplicate the gains from trade associated with future credit market access. Importantly, it was not necessary that foreign creditors be prepared to lend to the country in the future.

A large literature has developed that shows the limitations of this argument. For example, Kletzer and Wright (2000) showed that limitations on the ability of financial institutions in creditor countries to guarantee repayment restored the threat of exclusion as an incentive to repay. Wright (2001) showed that there were conditions under which even relatively competitive financial institutions (in the sense of making zero profits in equilibrium) might be able to coordinate to enforce an exclusion punishment

on a country in default. Amador (2004) showed that political economy considerations within a country may limit a country's willingness to use foreign savings and hence restored the threat of exclusion as a punishment.

All of the above papers were focused on the case of defaults on sovereign debt. Indeed, there is a sense in which sovereign debt, more than foreign direct investment, is more open to the Bulow and Rogoff critique of exclusion as a punishment for default. Essentially, there are many creditors who can offer essentially the same terms to the country, whether or new loans, or with regard to taking deposits. Hence, it is competition among these creditors that undermines the exclusion punishment. Direct investment, as we argued above, may often associated with the transfer of skills and factors of production. If these are in limited supply, then there are a limited number of competitors able to undermine the threat of exclusion, and hence the threat may be effective in inducing repayment.

The Costs of Sovereign Theft: Loss of Reputation

The low of credit market access is often referred to as a reputation based punishment for sovereign theft. This is because the intuitive notion of reputation captures something about the past behavior of the country that is the trigger for the punishment. Many authors, however, have argued that our intuitive notion of reputation refers to something intrinsic to the country, rather than simply something about its previous actions. Perhaps there is something about the countries government or political institutions that render it especially prone to engaging in acts of sovereign theft? To the extent that this intrinsic type of the country is unknown to foreign investors, acts of sovereign theft reveal this information to the market, and so countries may honor their foreign liabilities on average in order to avoid being marked as this type of country.

This notion of reputation has also had a substantial role in theories of why countries repay their debts. Early work by Cole and Kehoe (1996) has been developed and extended in recent work by Sandleris (2006) and Tomz (2007) with the latter documenting the importance of this notion of reputation throughout history.

When applied to foreign direct investment as well as sovereign debt, the simplest versions of these models of reputation has a strong prediction: to the extent that any act of sovereign theft reveals the type of the country and its government, then all acts of sovereign theft by a country should occur at the same time. Essentially, there is no reason to repay debts in the hope of preserving a good reputation if an act of expropriation has already ruined your reputation: the country should expropriate and default at the same time to get the maximum benefit for the same punishment.

Below when we look at the data on expropriations and defaults in history, we will see that there are a number of cases in which a country expropriates but does not default, or defaults but does not expropriate. This serves to undermine the simplest version of these models. However, the same notion of reputation may be preserved if we are prepared to admit the idea that defaults and expropriations signal different things about the government. Sandleris (2006), for example, argues that defaults may signal something about the countries fundamentals; to the extent that foreign direct investments occur in projects who's fundamentals differ from those affecting the economy as a whole, different reputations may deter expropriation.

Other Costs and Benefits of Sovereign Theft

There has been a great deal of work examining other potential costs associated with sovereign default. Following Kaletsky (1985) and Bulow and Rogoff (1989) a number of authors have explored the possibility of direct sanctions – ranging from trade and trade credit sanctions all the way to diplomatic actions – as an enforcement

mechanism. For example, Rose (2005) has explored the possibility that trade declines following defaults may be the result of trade sanctions, while Rose and Spiegel (2007) have examined the role of diplomatic relationships by asking whether countries with diplomatic links through membership of environmental treaties also engage in more financial asset trade. These views remain controversial: Tomz (2007) argues that there has never been a case in which trade sanctions have been explicitly used in history, while Martinez and Sandleris (2005) have argued that the trade declines identified by Rose (2005) are essentially unrelated to the pattern of creditor holdings of debt.

Suppose for the moment that direct sanctions are effective. Do we have any reason to believe that they would support foreign direct investment any differently to debt? To the extent that a substantial portion of sovereign debts are owed to creditor country governments and supranational institutions, it seems more likely that those governments would engage in concerted diplomatic and trade related sanctions in response to debt than in response to seizures of assets by their citizens. There may also be sizeable direct benefits to developing countries that expropriate foreign investments in politically sensitive natural resource projects, where nationalist sentiment often makes foreign investment unwelcome by segments of the population.

Another issue raised in the theoretical literature concerns the role of the liquidity of investments in supporting repayment. For example, Broner, Martin and Ventura (2006) have argued that the development of liquid secondary markets in debt may also constrain the ability of a country to default. Essentially, if the operation of secondary markets has led to the transfer of resources abroad before the country is able to default or expropriate, there is nothing to be gained from an action of sovereign theft. Spiegel (1994) makes a similar point in the context of foreign direct investment when he argued that the ability of a foreign investor to sell a direct investment stake to a domestic investor made direct investment a better vehicle for international capital

flows than sovereign debt. This view – that direct investment is more liquid than debt – is far from uncontroversial. Indeed, the opposite argument is the basis for the work of Hausmann and Fernández-Arias (2001) who argue that the illiquidity of direct investment stakes make it a more stable form of foreign investment that should be encouraged by developing countries as it reduces exposure to large short term capital movements.

In summary, there remains a great deal of disagreement in the theoretical literature as to the exact costs and benefits associated with acts of sovereign theft. There are also good reason to believe that the different hypothesized costs and benefits would have differential impacts on the attractiveness of debt, portfolio equity and direct investment as targets for theft, and hence as vehicles for foreign investment. In the next section, we explore these differences in more detail in the context of a suite of models of sovereign theft, before turning to the empirical evidence with a view to discriminating between these models.

SOME MODELS OF SOVEREIGN THEFT

In this Section we present a simple model that captures many of the features emphasized in the literature described above. We model the decision of a small open economy that has access to a productive opportunity that requires foreign capital. The decisions of the residents of the country are assumed to be captured by the decisions of a representative agent who is risk averse, so that foreign capital markets may also be used to insure against production risk. We present several versions of the model that differ according to the set of assets available through which the country can access international financial markets – we focus on debt and equity or foreign direct investment, but also consider a more complicated contracting environment – and according to the punishments meted out against the country in the event that it

defaults on debt or expropriates its foreign direct investments. We begin by outlining the basic features of the environment that are invariant across the different models.

Environment

Consider a small open economy that has access to a production opportunity which requires foreign capital. Time last for only one period, and an amount of foreign capital k invested at the start of the period produces

$$\theta f(k),$$

units of tradeable output at the end of the period, where f is a standard neoclassical production function that is strictly increasing and strictly concave in k , and where θ is a random productivity shock that is not known to the country, or to international investors, at the time investments take place. That is, investments in the country are intrinsically risky, independently of any political risk.

The preferences of the country are captured by a representative agent who is risk averse, and evaluates state contingent consumption levels according to a standard constant relative risk aversion utility function

$$U(c) = \begin{cases} \frac{c^{1-\sigma}}{1-\sigma}, & \text{for } \sigma > 0, \sigma \neq 1 \\ \log c & \text{for } \sigma = 1. \end{cases}$$

The return from borrowing will then be measured in terms of the expected value of any consumption of tradeable goods enabled by the project. As long as contracts are honored, the country will also be rewarded with an extra utility benefit V that will depend on the exact specification of the borrowing environment, and that is designed to capture any other benefits associated with honoring contracts (this may include anything from future access to capital markets to diplomatic benefits and everything in between).

The country is able to trade with a large group of risk neutral international investors. Competition amongst this group of investors ensures that they earn on average no more than the opportunity cost of their funds, which is assumed to be given by the constant international interest rate r^w . The environments that follow all differ according to the limitation, if any, that are placed on the ability of the country to trade with these international investors.

First Best

To begin, suppose that international trade in capital is unconstrained – the country is able to commit to honoring any contracts it signs, so that it never defaults on any debts and never expropriates any direct investments. In this case, investment will be at the first best level which maximizes the expected value of production less the opportunity cost of funds to the international investors. That is, the first best level of investment k^{fb} solves

$$1 + r^w = E[\theta] f'(k^{fb}),$$

where E is an expectation operator that captures the expected value of the productivity shock θ . This equation simply says that in a first best world, the country invests up to the point where the expected marginal product of investment equals the gross world interest rate.

Under our assumption that international capital markets are competitive, the country retains all of the gains from trade, and, moreover, is able to insure itself perfectly against fluctuations in production. As a result, they earn the certain return (measured in utility units) of

$$U(E[\theta] f(k^{fb}) - (1 + r^w)).$$

In what follows we will be interested in the extent to which limitations on the oper-

ation of international capital markets, either in terms of the set of assets that can be traded, or in terms of the ability of the country to commit to honoring the contractual terms of these assets, limit the ability of the country to invest and reduce country welfare.

Defaultable Debt

We begin our study of limitations on capital markets by supposing that the only available asset with which the country can borrow is defaultable debt. That is, suppose that the country can issue debt that pays a certain gross interest rate R as long as the country does not default. Then if the country borrows an amount k^d to finance investment in the project and repays the debt, the country can consume

$$\theta f(k) - Rk,$$

and earns a utility benefit V^D . By contrast, if the country decides to default they keep the entire output

$$\theta f(k),$$

but lose the utility benefit of repayment V^D .

As a result, after observing the productivity shock θ , the country defaults if

$$U(\theta f(k)) > U(\theta f(k) - Rk) + V^D.$$

It is easy to show that if a country defaults for some θ^* it defaults for all $\theta < \theta^*$. This follows from the strict concavity of U and the fact that $Rk \geq 0$.

The gross interest rate R paid on debt is determined by competition in the capital market, so that

$$1 + r^W = (1 - \pi(k)) R,$$

where π is the probability of default or

$$\pi(k) = \Pr \left\{ \theta | U(\theta f(k)) > U(\theta f(k) - Rk) + \delta V^D \right\},$$

which in turn depends upon k . That is, the interest rate on debt exceeds the world risk free return by an amount sufficient to compensate international investors for the risk of default. The country then chooses k taking into account the fact that its choice of k affects the interest rate it must pay.

This model belongs to the class of defaultable debt models introduced by Eaton and Gersovitz (1983) and exploited in recent papers by Arellano (2006), Aguiar and Gopinath (2006), Tomz and Wright (2007) and many others. In contrast to these models, it adds production as a motivation for international borrowing, as opposed to simply consumption smoothing. For simplicity, the direct utility benefit of repayment is taken as exogenous, as opposed to the papers by Yue (2006), Pitchford and Wright (2007) and Benjamin and Wright (2007) who model these payments as the outcome of bargaining between creditors and debtors.

In common with all of these models, we solve the model numerically using a version of the following algorithm which iterates over different bond price functions q which depend on promised payment amounts $b = Rk$ and in turn imply a gross interest rate $R = 1/q$. The reason for focusing on bond prices, as opposed to interest rates, is that bond prices are bounded between zero and one and are thus more amenable to numerical representation. Note that given a bond price function $q(b)$ and a promised repayment amount b , the amount of capital invested is simply $k = bq(b)$.

Algorithm 1 (*Defaultable Debt Model*)

1. *Conjecture an initial bond price function. It is typical to choose*

$$q_0(b) = \frac{1}{1 + r^w}.$$

2. Given q_n , compute the value to the country of borrowing $q_n(b)b$ against a promise to repay b which is then optimally defaulted upon in some states of the world

$$E \left[\max \left\{ U \left(\theta f \left(q_n(b)b \right) \right), U \left(\theta f \left(q_n(b)b \right) - b \right) + V^D \right\} \right].$$

Compute the probability of default $\pi_n(b)$.

3. Update the q function

$$q_{n+1}(b) = \frac{1 - \pi_n(b)}{1 + r^w}.$$

4. Iterate on steps 2. and 3. until convergence of the bond price functions to q^* . Then choose b to maximize expected utility of the debtor.

It is straightforward to show that the above process is monotone and hence that a solution exists.

Equity and Direct Investment

In contrast to the model with defaultable debt, now assume that the only asset is a form of equity in the project. Specifically, suppose that the country can raise capital by issuing α shares. Then it is easily verified that the country will expropriate the equity stake if

$$U(\theta f(k)) > U((1 - \alpha)\theta f(k)) + V^E,$$

where V^E is the direct benefit to honoring equity contracts which may, in principle, differ from V^D if a direct investor provides additional factors to the production process that make the project less valuable in the even of an expropriation.

In this case, the expropriation decision varies substantially according to the level of risk aversion of the country. In particular, for any k and α fixed, if preferences

are logarithmic, then expropriation is independent of α and k . If preferences are not logarithmic, but are of the CRRA class, then the above expression can be rearranged to show that expropriation occurs when

$$\theta^{1-\sigma} > \frac{(1-\sigma) \delta V}{[1 - (1-\alpha)^{1-\sigma}] f(k)^{1-\sigma}},$$

noting that $(1-\sigma)$ and $1 - (1-\alpha)^{1-\sigma}$ both change signs as σ is greater than, or less than, one. Hence, if $\sigma > 1$, which implies that the country is very risk averse, expropriation occurs when θ low. If $\sigma < 1$, which implies that the country is not very risk averse, expropriation occurs when θ is high. In the intermediate log case, expropriation is independent of the state of the world. This illustrates what Cole and English (1991) describe as a trade-off between “desperation” and “opportunism”. If the country is very risk averse, then it is very sensitive to the decline in consumption that must occur when output is low (θ small). In this case, desperation leads the country to expropriate investments in low production states of the world. On the other hand, when the country is not very risk averse, the fact that the foreign shareholding leads to greater transfer of resources abroad in high production states of the world (high θ) leads the country to opportunistically expropriate shareholdings. In the intermediate case, these two forces exactly balance and offset.

Let Θ^* be the set of all θ such that the contracts are not expropriated. Then in equilibrium, the shareholding α necessary to raise k resources must satisfy

$$(1 + r^W) k = \alpha f(k) \int_{\Theta^*} \theta g(d\theta),$$

in order to ensure that foreign investors break even.

As for the defaultable debt model, we solve the model numerically using a version of the following algorithm which iterates over different share functions.

Algorithm 2 (*Expropriable Equity Model*)

1. Conjecture an initial share function $\alpha_0(k)$.
2. Given α_n , compute the value to the country of borrowing k which is then optimally expropriated in some states of the world

$$E \left[\max \left\{ U(\theta f(k)), U((1 - \alpha(k)) \theta f(k)) + V^D \right\} \right].$$

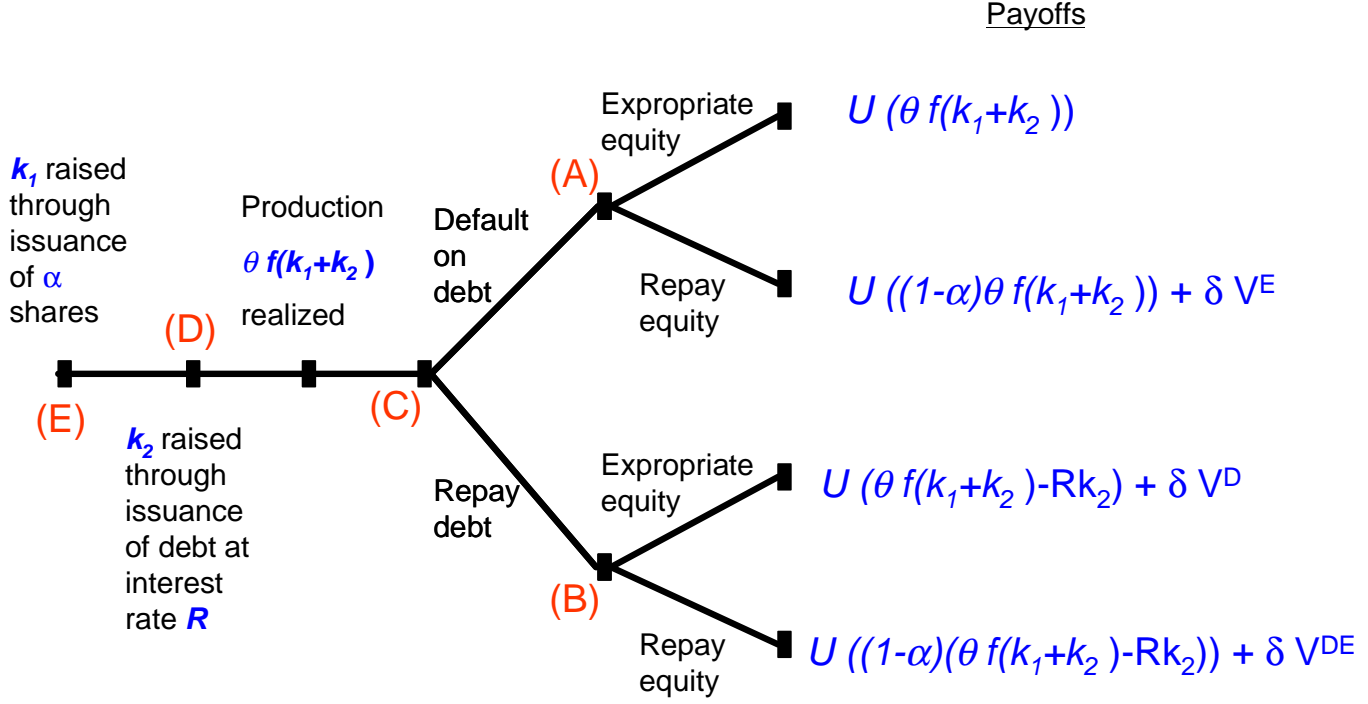
Compute the set of states in which the country expropriates Θ_n .

3. Update the α function

$$\alpha_{n+1}(k) = \frac{(1 + r^w) k}{f(k) \int_{\Theta_n} \theta g(d\theta)}.$$

4. Iterate on steps 2. and 3. until convergence of the share price functions to α^* .
Then choose k to maximize expected utility of the debtor.

Defaultable Debt and Expropriable Equity



So far, we have considered models in which the country can issue defaultable debt or expropriable equity. Now we turn to a model in which the country can issue both. This allows us to consider the mix of debt and equity, and how that mix evolves in response to changes in the economic environment.

In order to create room for both debt and equity, we need to be a little more explicit about the exact timing with which capital is raised, and the timing with which each form of capital is repaid (or not). To be specific, we assume that debts are repaid before profits are distributed to direct and portfolio investors (shareholders). We also assume that equity is issued prior to the issue of debt. The result is an environment in which several decisions are taken in successive stages which are displayed diagrammatically in Figure XX. As shown in the figure, the timing of decisions is then as follows. First, resources k_1 are raised by the issuance of α shares. Next more resources k_2 are raised by the issuance of debt at some interest rate R . The

total amount of resources raised $k_1 + k_2$ are then devoted to production which is risky. Then the outcome of this risk is observed, and production $\theta f(k_1 + k_2)$ is realized. Next the country decides whether or not to default on its debts. Finally, the country decides whether or not to expropriate the earnings of direct and portfolio investors. Future values depend on whether or not the country repays both debt and equity V^{DE} , just debt V^D or just equity V^E ; we normalize the value from continuing without honoring either debt or equity to zero.

To solve this model, we proceed by backward induction. Consider the decision of a country as to whether or not to expropriate the equity stake of foreign investors, but who has already defaulted on its debts. In this case, a country expropriates if and only if

$$U(\theta f(k_1 + k_2)) > U((1 - \alpha)\theta f(k_1 + k_2)) + \delta V^E.$$

We refer to this stage of the game tree as A and let

$$V^A(\theta, k_1, k_2; \alpha) = \max \{U(\theta f(k_1 + k_2)), U((1 - \alpha)\theta f(k_1 + k_2)) + \delta V^E\},$$

be the optimum value from ending up at this stage. We let $\phi^A(\theta, k_1, k_2; \alpha)$ be an indicator function for an expropriation in stage A in state θ .

Next, suppose we are in the final period, and suppose that the country has NOT defaulted on its debts and must decide whether or not to expropriate the equity holdings of foreign investors. If the country expropriates, it receives resources totaling

$$\theta f(k_1 + k_2) - Rk_2,$$

which is total output net of the repayment of debt, while if it honors the equity contracts it receives

$$(1 - \alpha)[\theta f(k_1 + k_2) - Rk_2].$$

Hence, a country in this situation expropriates if and only if

$$U(\theta f(k_1 + k_2) - Rk_2) + \delta V^D > U((1 - \alpha)[\theta f(k_1 + k_2) - Rk_2]) + \delta V^{DE}.$$

We refer to this stage of the game tree as B and let

$$V^B(\theta, k_1, k_2; \alpha, R) = \max \{ U(\theta f(k_1 + k_2) - Rk_2) + \delta V^D, U((1 - \alpha)[\theta f(k_1 + k_2) - Rk_2]) + \delta V^{DE} \},$$

be the optimum value from ending up at this stage. We let $\phi^B(\theta, k_1, k_2; \alpha, R)$ be an indicator function for an expropriation in stage B in state θ .

Next, consider the decision of a country as to whether or not to default on its debts. If it repays its debts, it gives up resources Rk_2 today and moves on to stage B ; if it defaults, it keeps these resources and moves on to stage A . Hence a country in state θ defaults if and only if

$$V^A(\theta, k_1, k_2; \alpha) > V^B(\theta, k_1, k_2; \alpha, R),$$

in this stage, which we call it stage C , which produces the value function

$$V^C(\theta, k_1, k_2; \alpha, R) = \max \{ V^A(\theta, k_1, k_2; \alpha, R), V^B(\theta, k_1, k_2; \alpha) \}.$$

We write $\phi^C(\theta, k_1, k_2; \alpha, R)$ as an indicator function for a default at stage C in state θ . Hence, the probability that the country defaults is given by

$$\pi(k_1, k_2; \alpha, R) = \int \phi^C(\theta, k_1, k_2; \alpha, R) g(d\theta).$$

Next, consider the borrowing decision of a country that has already raised k_1 through equity, can issue some amount of debt b and that faces a bond price $q(k_1, b)$. Note that the country has not observed the outcome of the production uncertainty at this point, and hence maximizes expected payoffs. Then the optimum value at this stage, call it D , is given by

$$V^D(k_1; \alpha) = \max_b \int V^C(\theta, k_1, q(k_1, b)b; \alpha, 1/q(k_1, b)) g(d\theta).$$

We let the optimal choice of b , and its implied level of capital raised through debt issuance, as a function of k_1 , be given by $k_2^*(k_1)$.

An important input to this stage is the bond price function, which we assumed is determined by competition amongst participants in debt markets. This implies that the bond price satisfies

$$q(k_1, b; \alpha) = \frac{1 + r^W}{1 - \pi(k_1, b; \alpha)},$$

where r^W is the risk free world interest rate.

Finally, the choice of equity issuance is made to maximize

$$V^D(k_1; \alpha(k_1)),$$

where now we have written α as a function of k_1 which is determined by competition amongst investors in equity markets. That is, $\alpha(k)$ must solve

$$(1 + r^W) k_1 = \alpha(k_1) f(k_1 + k_2^*(k_1)) \int \theta [\phi^C(\theta, \cdot) (1 - \phi^B(\theta, \cdot)) + (1 - \phi^C(\theta, \cdot)) (1 - \phi^A(\theta, \cdot))] g(d\theta),$$

where we have suppressed the arguments of the ϕ 's for convenience.

This model is somewhat more complex than the two previous models, as it combines elements of each. It is solved by applying the following algorithm.

Algorithm 3 (*Defaultable Debt AND Expropriable Equity Model*)

1. Conjecture an initial share function $\alpha_0(k)$ and an initial bond price function $q_0(b)$.
2. Given k_{1n} , $\alpha_n(k_{1n})$, $k_{2n} = q_n(b_{2n}) b_{2n}$ and $q_n(b_{2n})$ compute the value of the optimal expropriation decision conditional on default on debt as a function of k_{1n} and k_{2n}

$$V^A(\theta, k_1, k_2; \alpha_n) = \max \{ U(\theta f(k_{1n} + k_{2n})), U((1 - \alpha(k_{2n})) \theta f(k_{1n} + k_{2n})) + V^E \},$$

and conditional on repayment of debt as a function of k_{1n} and k_{2n}

$$V^B(\theta, k_1, k_2; \alpha_n, q_n) = \max \{ U(\theta f(k_{1n} + k_{2n}) - b_{2n}) + V^D, U((1 - \alpha(k_{2n})) (\theta f(k_{1n} + k_{2n}) - b_{2n})) \}$$

Record the sets of states Θ^A and Θ^B in which equity is not expropriated.

3. Given k_{1n} , $\alpha_n(k_{1n})$, calculate the value to the country of borrowing $q_n(b)b$ against a promise to repay b which is then optimally defaulted upon in some states of the world

$$V^C(\theta, k_1, q_n(b)b; \alpha_n, q_n) = \max \{V^A(\theta, k_1, q_n(b)b; \alpha_n), V^B(\theta, k_1, q_n(b)b; \alpha_n, q_n)\}.$$

Compute the probability of default $\pi_n(b; k_{1n}, \alpha_n(k_{1n}), q_n(b))$.

4. Update the q function

$$q_{n+1} = \frac{1 - \pi_n(b)}{1 + r^w}.$$

5. Iterate on steps 2. and 3. until convergence of the bond price functions to q^* .
Then choose b to maximize expected utility of the debtor to get

$$V^D(k_1; \alpha_n(k_1)) = \max_b E[V^C(\theta, k_1, q^*(b)b; \alpha_n, q^*)].$$

6. Given $\alpha_n(k)$, choose k to maximize

$$V^D(k; \alpha(k)).$$

7. Update the α function

$$\alpha_{n+1}(k) = \frac{(1 + r^w)k}{f(k) \int_{\Theta_n} \theta g(d\theta)},$$

where Θ_n is calculated as the composition of the probability of default function given k , and the expropriation sets given k .

8. Iterate on steps 2 through 7 until convergence of the share function to α^* .

In solving this model, it will be necessary for us to take a stand on the relationship between the direct benefit of not defaulting on debt, and the direct benefit from not expropriating equity. We will consider three main cases of interest:

1. (broad benefits) In this case, we assume that any failure to honor a contract involves the loss of all direct benefits. We capture this with the assumption that $V^{DE} > 0$ and $V^D = V^E = 0$. This can be motivated by a model in which any act of repudiation or default reveals information about the country's type which affects its access to all credit markets.
2. (narrow symmetric benefits) In this case, we assume that the failure to honor a contract has only a narrow cost, and does not affect the benefits from honoring other contracts. We capture this case with the assumptions $V^D = V^E > 0$ and $V^{DE} = V^D + V^E$. This can be motivated by a model in which an act of repudiation or default has no spillover to other credit markets.
3. (narrow asymmetric benefits) Much of the previous literature has argued that the punishments to expropriating direct investments are greater than the costs of defaulting on debts. This is due, usually, to the assumption that direct investors provide complementary inputs that are withdrawn in the event of an expropriation and thus lower the value of the asset once expropriated. We capture this case with the assumption that $V^E > V^D > 0$ and $V^{DE} = V^D + V^E$.

The Optimal Default/Expropriation Constrained Contract

So far we have considered four cases: the first best, in which both contracts and enforcement were unconstrained; a model with only defaultable debt, in which the country is unable to commit to honoring what would otherwise be a risk free debt contract; a model with expropriable equity, in which the country cannot commit to honoring what would otherwise be simple shares; and a model with both defaultable debt and expropriable equity. In this section, we analyze a version of the model in

which the country is unable to commit to honoring any contract, but in which types of contracts that can be issued are unconstrained. Indeed, rather than attempt to specify the set of all possible contracts, we will simply design the best possible contract that still respects the fact that the country cannot commit to honor it. To put it yet another way, we look for the optimal “self-enforcing” contract.

In particular, we solve an optimization problem in which the design of the contract is chosen to maximize the welfare of the country subject to the condition that it have an incentive to honor the contract after observing the outcome of uncertainty. This optimal contract chooses a capital stock and state contingent consumption levels for the country, and repayments to the creditors, to maximize expected country welfare

$$\sum_{\theta} \pi(\theta) U(c(\theta)),$$

subject to a sequence of constraints implied by feasibility

$$c(\theta) + t(\theta) \leq \theta f(k),$$

for all θ (which simply state that total transfers to both creditors and the country cannot be larger than the total amount of production), a single constraint implied by zero profits for creditors

$$\sum_{\theta} \pi(\theta) t(\theta) \geq (1 + r^W) k,$$

and a sequence of “no default or repudiation” constraints

$$U(c(\theta)) + V^{DE} \geq U(\theta f(k)),$$

for all θ (which state that the country must receive enough consumption to deter in from defaulting or expropriating in every state of the world).

If we define $\pi(\theta) \mu(\theta)$ to be the Lagrange multipliers on the feasibility constraints, λ to be the multiplier on the zero profit constraint, and $\pi(\theta) \gamma(\theta)$ the multipliers on

the “no default or repudiation” constraints, then the first order necessary² conditions for an optimum include

$$\begin{aligned}(1 + \gamma(\theta)) U'(c(\theta)) &= \mu(\theta), \\ \mu(\theta) &= \lambda, \\ \lambda(1 + r^w) &= \sum_{\theta} \pi(\theta) \theta f'(k) [\mu(\theta) - \gamma(\theta) U'(\theta f(k))].\end{aligned}$$

From this it is easy to see that if the “no default or repudiation” constraints do not bind in any state of the world, or $\gamma(\theta) = 0$ for all θ , then

$$U'(c(\theta)) = \lambda,$$

for all θ , and the consumption of the country is perfectly smoothed. In addition, investment is at the first best level

$$1 + r^w = f'(k) \sum_{\theta} \pi(\theta) \theta.$$

In any state where the “no default or repudiation” constraint does bind, we have

$$U'(c(\theta)) = \frac{1}{1 + \gamma(\theta)} \lambda < \lambda,$$

which shows that the optimal contract deters default or expropriation by awarding the country more consumption (and hence a lower marginal utility of consumption) than it receives in any state where the “no default or repudiation” constraint does not bind. From this, a simple variational argument shows that these constraints only bind in high θ states of the world. Intuitively, the country would like to smooth its consumption completely, and only fails to do so in states of the world where the constraint on repayment binds. But this constraint is tighter in states of the world where production is higher (high θ). This suggests that equity should improve on

²The problem is not convex due to the presence of concave U and f on the right hand side of the “no default or expropriation” constraint. Hence these conditions are not in general sufficient.

debt in the contractual structures considered above, at least when agents are not too risk averse.

Rearranging the first order condition in k yields

$$1 + r^w = f'(k) \sum_{\theta} \pi(\theta) \theta \left(1 - \frac{\gamma(\theta)}{\lambda} U'(\theta f(k)) \right).$$

The new term on the right hand side of this expression is less than one in high θ states of the world. This decreases the expected return and means there will be a tendency to under-invest.

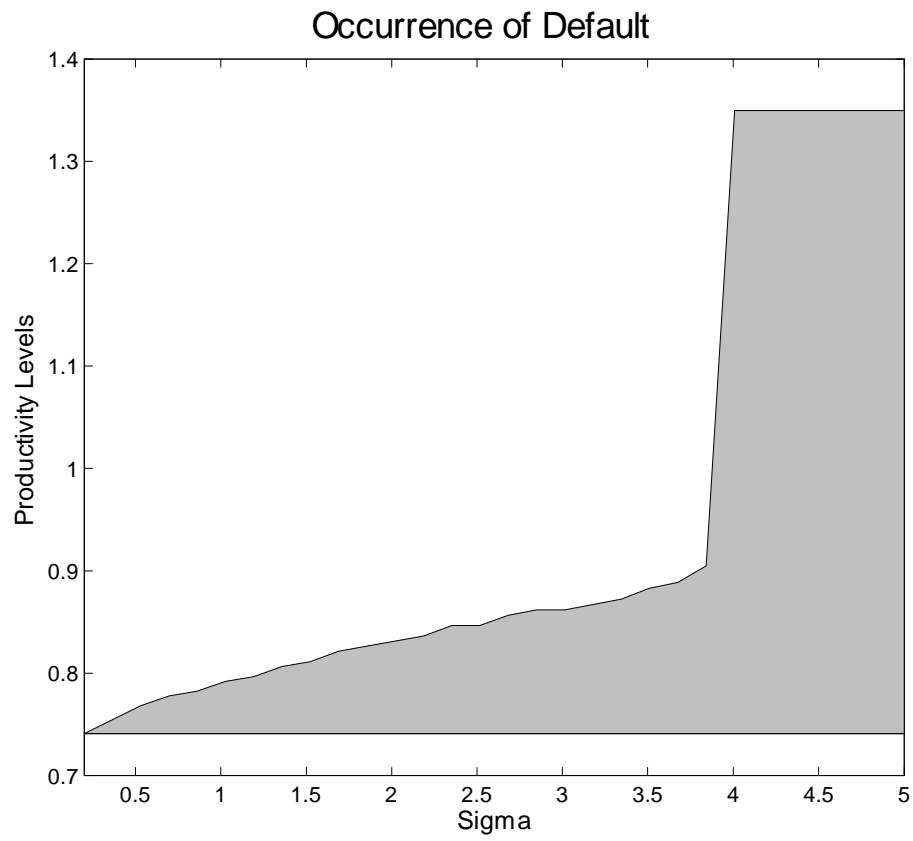
To say more about the features of this contract, we must solve the model numerically. In the absence of bond prices and share functions over which we need to iterate to convergence, the solution algorithm in this case is a straightforward optimization problem.

Results

We begin our analyses of this suite of models by comparing the performance of debt and equity separately as vehicles for foreign investment under a range of different parameter values. Our baseline set of parameters is relatively standard: the coefficient of relative risk aversion is set to two, world interest rates are set at five percent, and the capital share is set to one-third. We assume that θ is distributed according to a discrete state approximation to a lognormal distribution with a coefficient of variation of 10%. We start by examining the case in which the direct benefit to the repayment of debt, and the repayment of equity, are equal. Since our objective is to examine the properties of these models, we choose the size of the direct benefits/penalty to best display the features of the equilibrium contracts, usually choosing values ranging from one-half to ten times the first best welfare level.

The theory above suggested that when countries are relatively risk averse, debt and equity were similar in the sense that countries were most tempted to both default and expropriate when output is low. We therefore begin our numerical analysis by examining how debt and equity decisions vary as we vary the coefficient of relative risk aversion σ for the country from a relatively risk tolerant 0.2 up to a quite risk averse 5.

Figure XX plots the set of productivity levels at which the country defaults for different levels of risk aversion σ . As σ increases, the country becomes more risk averse, and resources in bad states of the world become valuable. The result is that the country defaults in more and more bad states. This leads to higher interest rates which in turn increase the incentive to default until at a coefficient of relative risk aversion just under four, default occurs in all states and the market for debt shuts down.



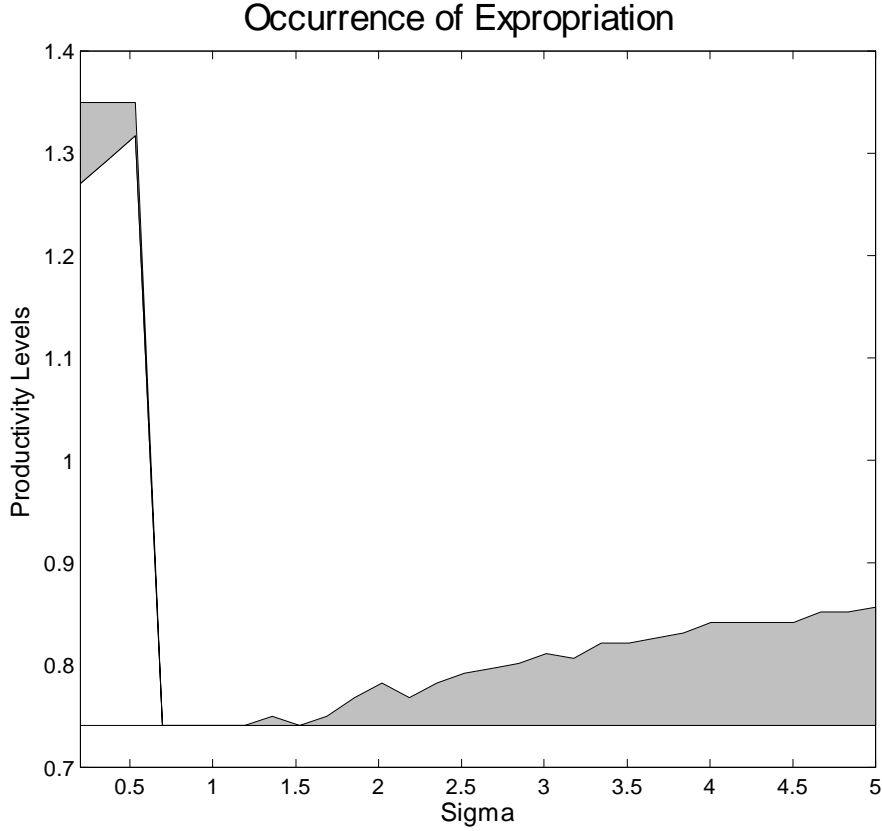
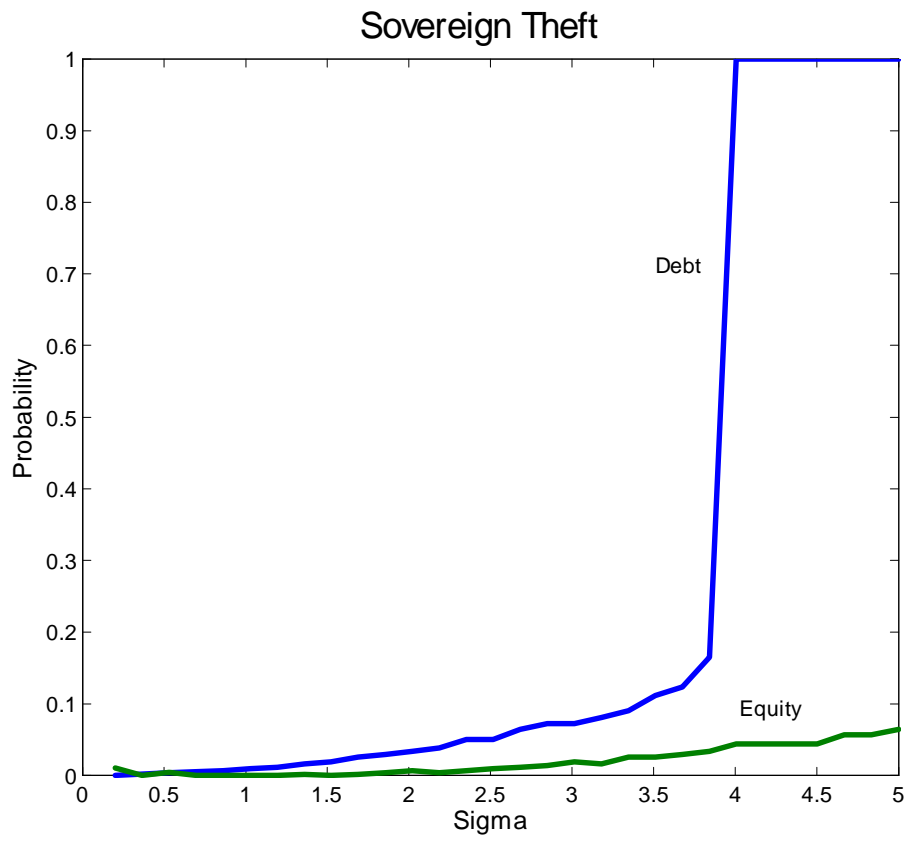
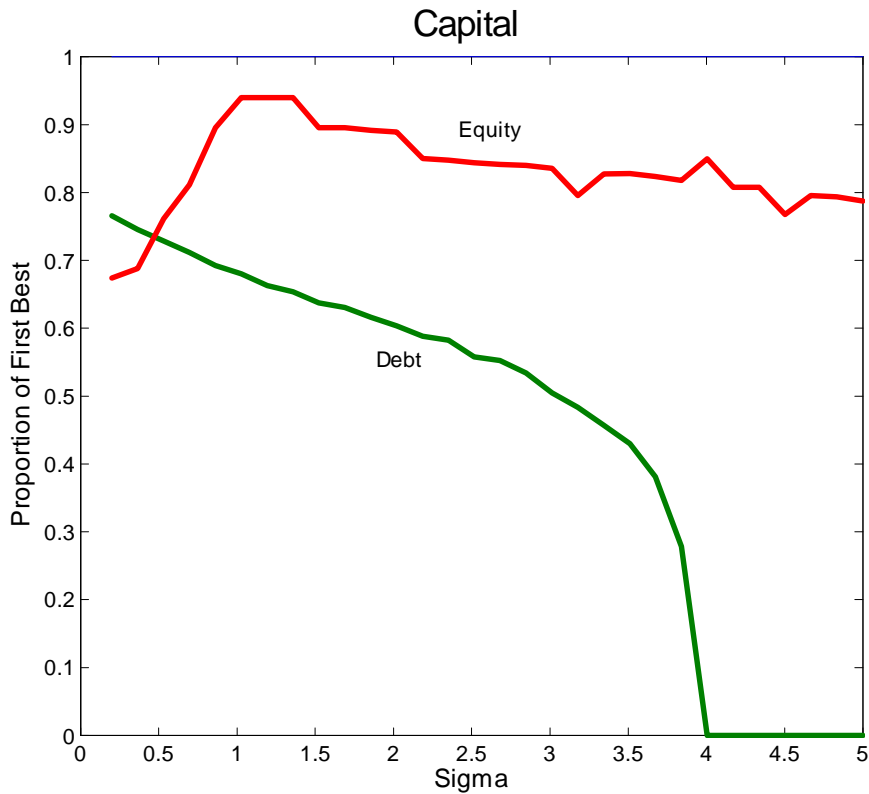
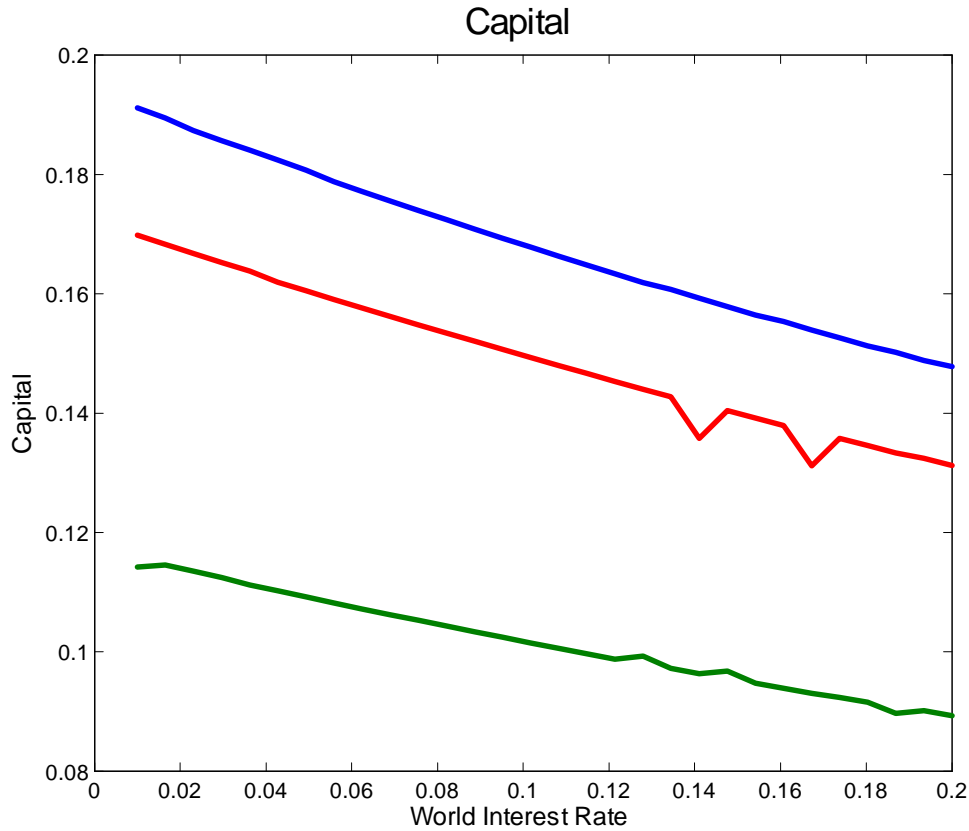


Figure XX plots the analogous set for the model of direct investment with expropriation. For the exact value of $\sigma = 1$, we showed above that the country either always expropriates or never expropriates. For these parameter values, expropriation never occurs, as can be seen by the fact that the default set is empty around $\sigma = 1$. As shown for the theoretical model, expropriations occur in good states of the world when the country is relatively risk tolerant, and occur in bad states of the world when the country is relatively risk averse. These properties are also reflected in the probabilities of default and expropriation, plotted in Figure XX, which shows that the probability of expropriation is non-monotonic, falling slightly as σ rises towards one, before rising afterwards.

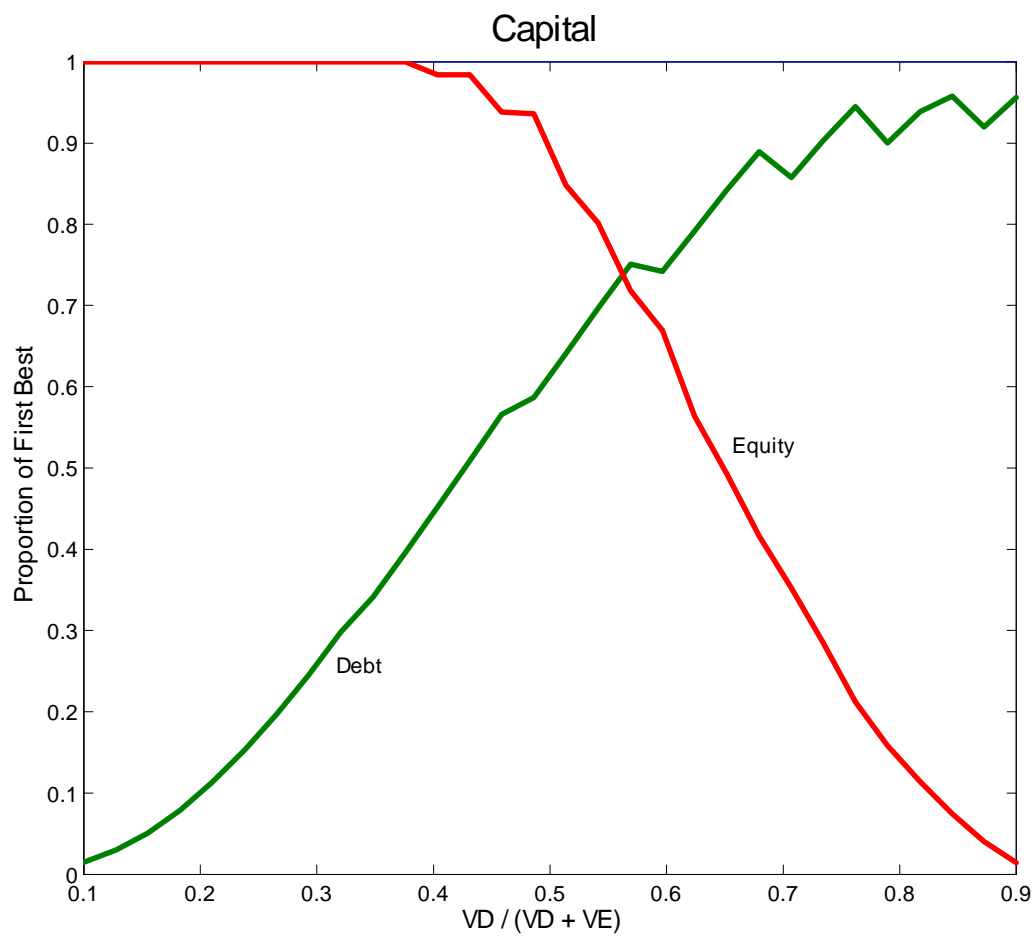


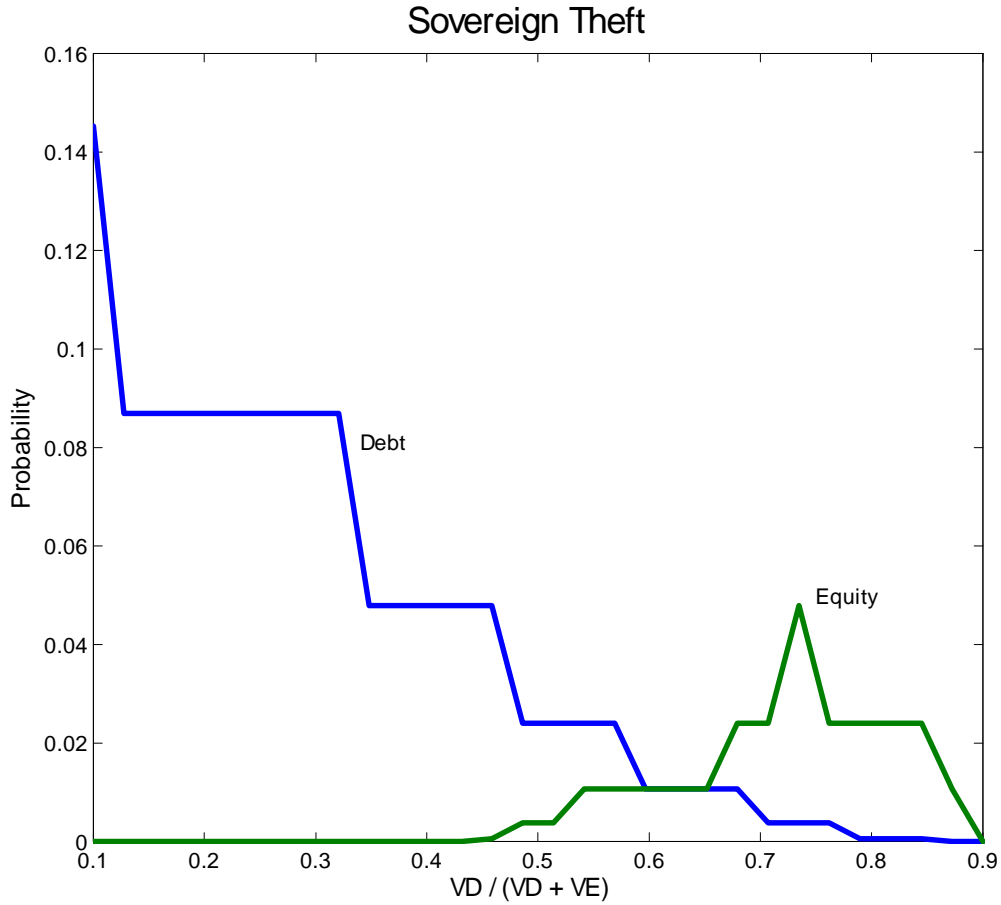


The first best level of capital does not vary with the risk aversion of the country. To see how limitations on the set of contracts and enforcement affect capital levels, Figure XX plots the amount of capital invested as a proportion of the first best level for different values of σ . Again, the pattern for the model with direct investment of equity is non-monotonic with larger amounts of capital being invested when σ is close to one. When agents are quite risk averse, the FDI model leads to more investment than the debt model as the likelihood of default is larger than the probability of expropriation for these parameter values; this pattern is reversed for greater levels of risk tolerance. Relative welfare also follows a similar pattern to the capital stock. For high levels of risk aversion, the low investment level leads to much lower welfare under debt. For low levels of risk aversion, debt is preferred to equity as the risk of default is lower than the risk of expropriation.



When we turn to the examination of the data below, one of the things we will be looking at is changes in the composition of international borrowing between debt, portfolio equity and foreign direct investment. One factor that might plausibly influence the composition of foreign liabilities is the level of the world interest rate. As shown in Figure XX, increases in the world interest rate appear to reduce investment with debt and equity by approximately the same proportion as for the first best level of capital. Next, we turn to an examination of the model with both debt and equity to see if this result is robust.





Finally, we are interested in understanding how changes in the size of direct penalties and benefits affect the amount of debt and equity issued. Figure XX presented the level of capital as a proportion of the first best level for different levels of the direct benefits. Specifically, we fix the total amount of “surplus” that can be used to induce repayment and vary the proportion of it available to debt and equity, with values to the left of the graph corresponding to slight punishments for default and large punishments for expropriation, while values to the right of the graph correspond to large penalties on default and small penalties on expropriation. Not surprisingly, capital is largest for an instrument whenever the punishments for theft of that instrument are greatest. More interestingly, punishments to default need to be almost one

and one-half times as large as the punishments on expropriation in order to induce the same level of investment. The reason is that our benchmark case has $\sigma = 2$, and so both expropriations and defaults are more likely to occur in bad times. However, because equity involves smaller payouts in bad times for a given level of liabilities, the risk of expropriation is smaller, and more investment can be supported in equilibrium. This is partly reflected in the probabilities of sovereign theft plotted in Figure XX, which also shows that the probability of expropriation is non-monotonic in enforcement power. Initially, decreases in the punishment to expropriation result in higher probabilities of expropriation and less investment. However eventually the declines in investment also lead to a decline in expropriation probabilities.

Finally, these last two diagrams also point to an issue that will come up in our empirical analysis below. For the entire span of our data, the vast bulk of developing countries liabilities are in the form of debt, rather than portfolio equity or direct investment. These figures suggest that, as equity is all other things equal preferred to debt, that the punishments to expropriating on debt are much more severe than those associated with expropriation.

Next, we turn to a discussion of our model with both debt and equity. This model is more time consuming to compute since it involves solving versions of our debt only problem for many possible share and capital from equity issuance choices. As a result, we report results from a smaller number of simulations. Starting from our benchmark values with equal direct benefits for repayment of debt and equity, inspection of the debt alone and equity alone models reveals that with $\sigma = 2$ default probabilities were a little under five per-cent while the expropriation probability was slightly positive. When both debt and equity are available, the country is able to construct a portfolio of debt and equity that produces no risk of default or expropriation for investors. As a result, the country is able to borrow and invest an amount more than ninety-eight per-cent of the first best capital level. Almost twenty-nine per-cent of the project is

financed with debt. The finding that debt is preferred to equity appears to be robust for risk aversion levels greater than one.

In order to examine whether we can generate debt levels that are more in line with what we observe in the data, we repeat the above experiment and increase the punishment for default to be three times the level of the punishment for expropriation. In this case, the total amount of investment falls to eighty-five per-cent of the first best level, while the proportion of this financed by equity rises to roughly sixty-three per-cent, which is close to the current distribution of foreign liabilities, but is less than the peak in which debt was responsible for almost ninety-per-cent of foreign liabilities in developing countries. This begs the question: what is it about debt that allows for such larger punishments? We review some hypothesis in the next section.

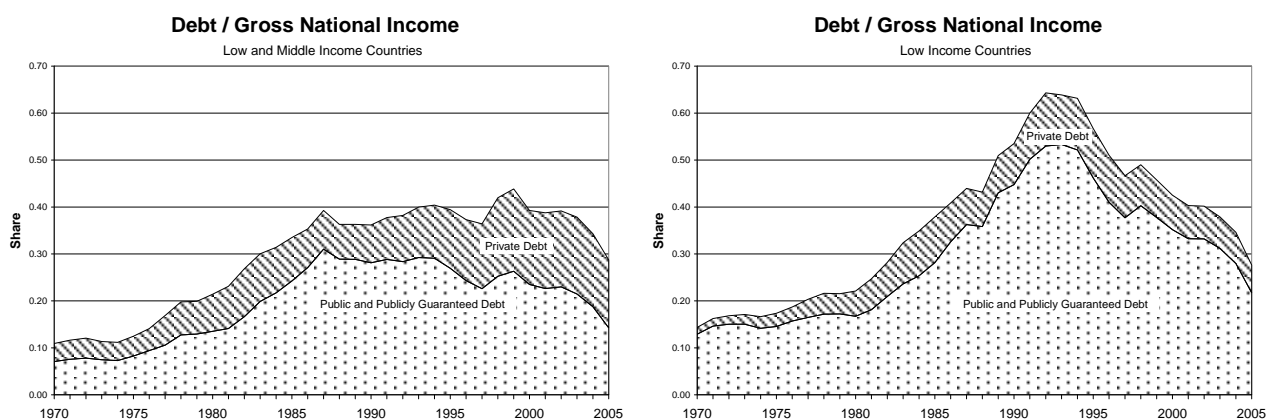
TRENDS IN FOREIGN INVESTMENT POSITIONS

International investments in debt, portfolio equity and direct equity are subject to similar forms of political risk. However, these investments also differ along a number of dimensions. Debt and equity are different assets with different payment profiles. Historically, most international debt issued by developing countries was *sovereign* debt, in the sense that it was issued by the public sector of that country, while most equity is issued by private residents of developing economies. Moreover, while equity is almost entirely held by private investors in creditor countries, developing country debt is often held by creditor country governments and international institutions who arguably differ from the private sector in both their motivations for making loans, and in the tools available to them to encourage repayment.

In this section, we begin our analysis of the differences between sovereign debt and direct equity by examining patterns in the form of international capital flows to developing countries, and in particular how this form has differed in terms of the

identity (public or private) of the borrower and the creditor, and the nature of the asset. Finally, we end this section by examining the sectoral composition of direct investment, with particular reference to the natural resource sector. Data limitations force us to focus on the period from 1970 to the present, although we sketch patterns from earlier time periods where data availability permits.

Private vs Public Borrowers



The first, and most obvious, dimension along which foreign investments may differ is in the identity of the borrower, and in particular whether the borrower is a government, or government owned entity, in the borrowing country. This is potentially important to the extent that the incentive for a government to default on their own obligations may be different than the incentive to interfere in the repayment of private debts³, and/or expropriate the foreign owned equity in private firms.

Whereas the vast bulk of all portfolio equity and foreign direct investment is in private firms in developing economies, the public sector constitutes the major source for foreign debt. As a result in Figures 1 and 2 we present data on the total debt,

³See Wright (2006) for some instances in which governments have intervened in, and in some cases defaulted on behalf of, the debts of private agents.

as well as its composition, for developing countries for the past thirty-five years. All data comes from the World Bank's *Global Development Finance* publication which draws on reports by debtor countries as to their own, and their citizens, outstanding indebtedness.

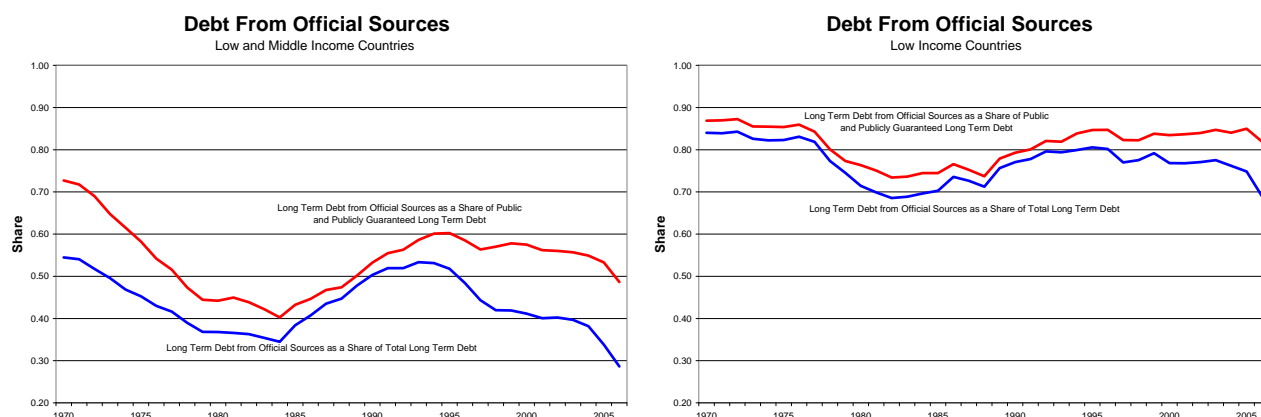
Both figures indicate that indebtedness rose from lows of around ten per-cent of gross national income (fifteen per-cent for the lowest income countries) at the start of the 1970s up to highs of around 40% of gross national income by the middle of the 1980s. The growth in indebtedness for low income countries was even more extreme, peaking at over sixty per-cent of GNI in the early 1990s. In recent years, indebtedness has fallen for all developing countries, with the bulk of the decline occurring in low income countries.

The figures also point out that changes in public sector and publicly guaranteed borrowing were the driving force for these patterns. This is particularly evident in the lowest income countries where the public sector accounts for roughly 80 per-cent of all borrowing, and where public sector borrowing reach highs in excess of half of GDP in the early 1990s. In all developing countries, the recent declines in indebtedness have also been driven by declines in public borrowing, although this appears to have been partially offset by an increase in private sector borrowing among middle income countries.

Looking ahead, these data point to two issues that will come up below. The first is the fact that most of the foreign liabilities of less developed countries are in fact the liabilities of less developed country governments. To the extent that government debt in all countries is especially prone to acts of sovereign theft (that is, default) less developed countries can be expected to be especially prone. Second, the fact that sovereign borrowing peaked in the mid to late 1980s suggests that this period should also have been the most prone to sovereign default. By contrast, the relative importance of private sector liabilities – both debt and equity – in the early 1970s and

at the start of the twenty-first century should lead to alternative forms of sovereign theft – expropriation of direct investments, as well as interference in the repayment of private debts – assuming prominence over debt defaults. We will look for these patterns in the data on both defaults and expropriations below.

Private vs Official Lending



Another dimension along which foreign investments differ is in the identity of the creditor. This could be very important to the extent that different creditors, and in particular official creditors such as supranational institutions and foreign governments, may have access to different means of enforcing contracts than do private creditors. It may also matter to the extent that official creditors may be motivated by concerns other than profit maximization in both making the loans, and in renegotiating their terms following a default.

To examine trends in the importance of official creditors, Figures XX and XX plot the share of long term debt (either owed by the public sector of a country, or the country as a whole) that comes from official sources. The restriction to debt would

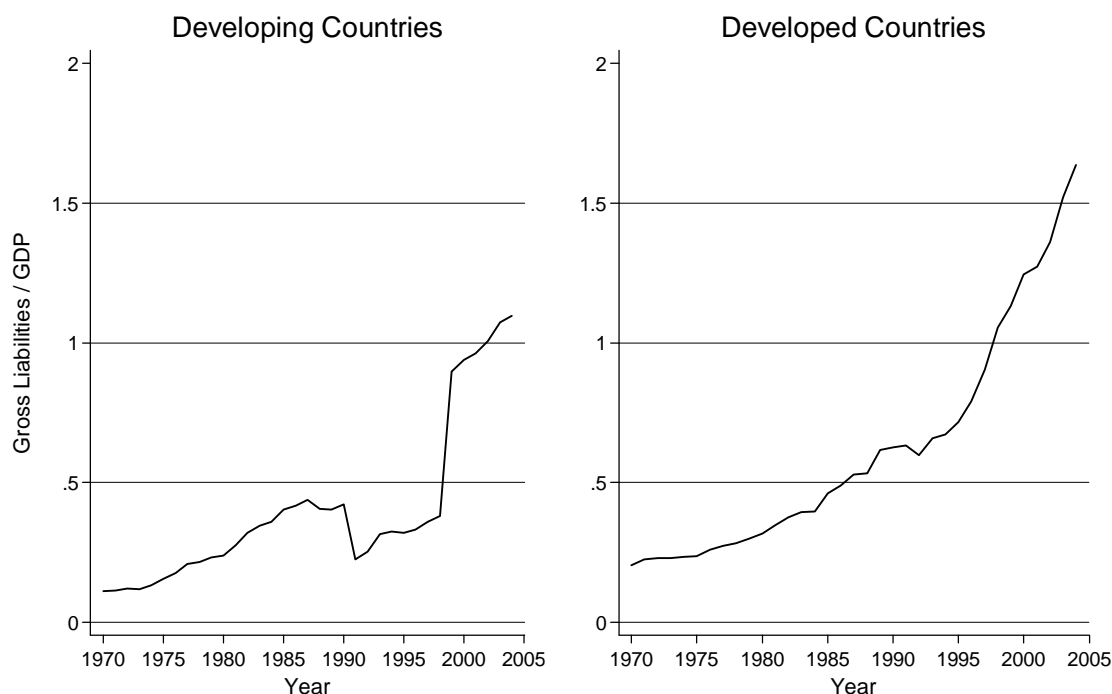
appear to be relatively unimportant here in that almost all portfolio equity and foreign direct investment comes from private sources, and hence has no official component.

What the figures show is that there has been a long term decline in the level of debt owed to official creditors by debtor countries, interrupted by a brief rise in the mid to late 1980s as supranational institutions and creditor country governments made loans during the 1980s Debt Crisis. Nonetheless, amongst the lowest income countries, official sources of debt continues to be the primary source of debt, with in excess of 80% of all public sector debt in these countries being owed to foreign governments.

Debt vs Equity

Next, we turn to an examination of changes in the asset classes used for foreign investment. Our main source is the Lane and Milesi-Ferretti (2006) database of net foreign asset and liability positions broken down into debt, foreign direct investment and portfolio investment starting in 1973. Data are aggregated into two country groupings: the “developed countries” are defined as the 1973 membership of the Organization for Economic Cooperation and development (OECD); all other countries are classified as “developing”.

Figure XX plots the Lane and Milesi-Ferretti estimates of gross liability positions scaled by gross domestic product. Interestingly, both samples begin the period with roughly similar levels of gross liabilities to GDP, at between one-tenth and one-fifth of GDP by the mid 1970s. Growth in gross liabilities in the developed countries far outpaced that in developing countries, so that by the end of the period their level was almost fifty per-cent higher at more than one and one-half of GDP, while in the developing countries the ratio just exceed one multiple of GDP. Partly this difference is due to the write down in sovereign debt associated with the Brady restructuring



plan at the start of the 1990s, which shows up as a significant fall in gross liabilities at the start of the 1990s.

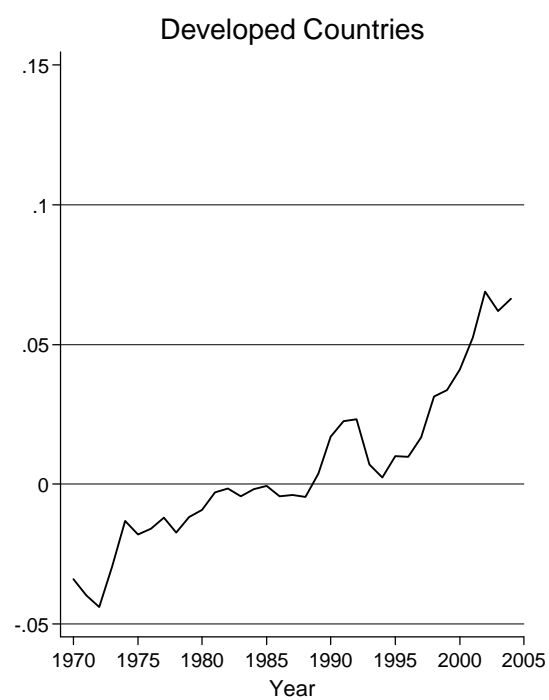
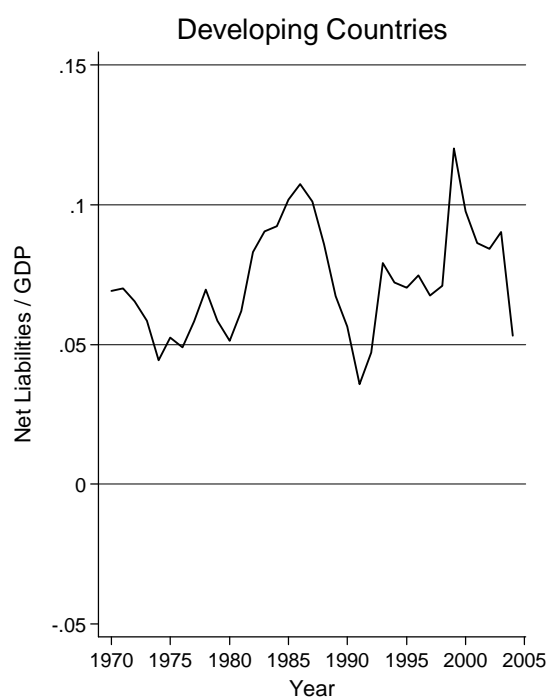
Data on net liability positions scaled by GDP is presented in Figure XX, which also points out one of the dangers associated with the use of international investment position statistics: by the end of the period, both the developing and developed countries were net debtors, implying that the world was in net debt to someone else. This is a manifestation of the well known world current account deficit, and emphasizes the caution that must be exercised in interpreting these estimates. Nonetheless, the pattern is striking. Despite the similarity in gross liability positions, the developing countries have substantial offsetting net asset positions. These positions are large enough to ensure that the developing nations are net creditors at the start of the

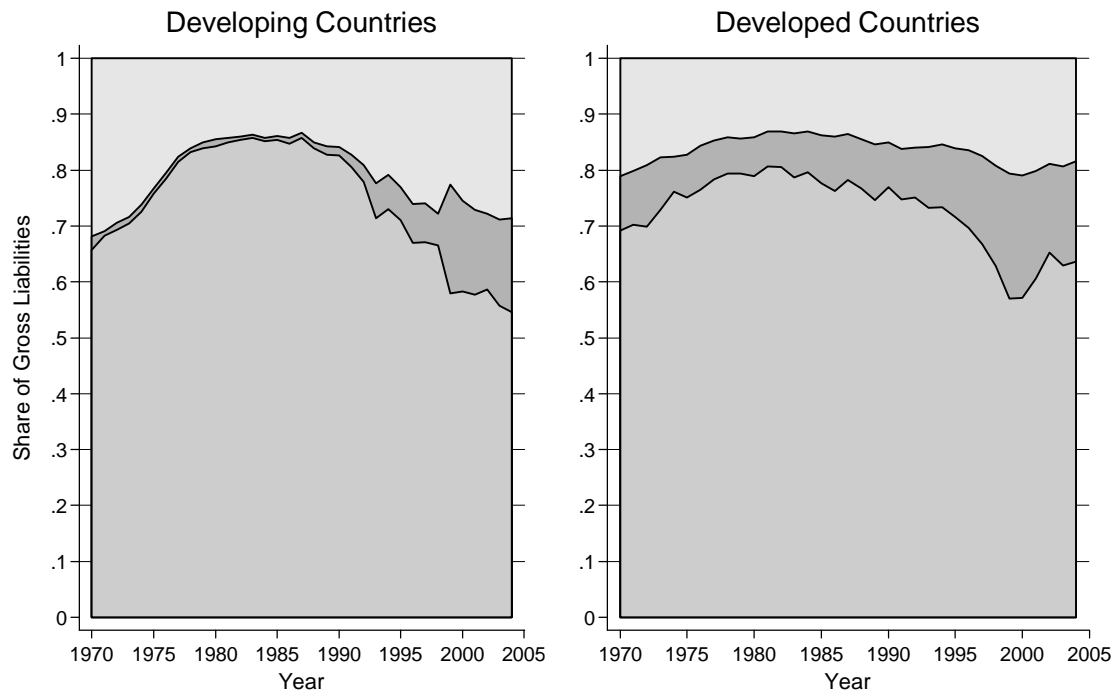
period, and that the net level of their liabilities scaled by GDP remain below that of the developing nations in all but the most recent period.

Theory tells us that the distinction between net and gross liabilities in this context is important. If the consequence of an incident of sovereign theft is the retaliatory seizure of assets, then countries that have large net liability positions should, other things equal, be more inclined to default or expropriate as they will gain more by appropriating the proceeds of their liabilities than they will lose from the loss of their assets. On the other hand, if there is no retaliatory seizure of assets, then countries with the largest gross liability positions should be most tempted to engage in sovereign theft. The evidence presented above, combined with the fact that developed countries have been relatively unlikely to engage in sovereign theft throughout history, is evidence that the benefits to these acts must be more closely related to net rather than gross positions.

Finally, Figure XX plots a decomposition of the major classes of gross foreign liabilities. For all countries in all time periods, debt is the major source of foreign liabilities. However, for both developed and developing countries the proportion of foreign liabilities due to foreign direct investment and other equity assets “U shaped”, declining from high levels at the start of the period, reaching a trough in the mid 1980s, before rising again in recent years. This pattern is especially prominent amongst developing nations where foreign direct investment and portfolio equity accounted for almost one-third of gross foreign liabilities in 1970, fell to little more than ten-percent of the total in the early 1980s, and have risen to more than forty per-cent of the total in recent years. This pattern seems to be driven mostly by movements in bank loans and other debt which rose sharply in the mid 1970s before falling back following the Latin American Debt Crisis of the 1980s.

This U shaped pattern also points to an important issue as we begin to think





about the incentives for countries to engage in sovereign theft. Over time, the gross foreign liabilities of developing countries have risen, leading to a greater potential gain from an act of expropriation and default. However, the relative importance of debt and equity having changed, we might expect to see changes in the pattern of expropriation and default, with default becoming more important in the mid 1980s, and with expropriation more important at the start and end of the period. We return to this question below when we examine our data on acts of sovereign theft.

EXPROPRIATION AND DEFAULT IN HISTORY

Having discussed trends in the pattern of foreign investment, and hence in the stock of foreign assets subject to the risk of sovereign theft, we now turn to a study of acts of sovereign theft that have occurred in practice. We begin the next section by describing our database of sovereign defaults, nationalizations, expropriations and other acts of sovereign theft. Some of these data are drawn from the existing literature and our other work, while some – in particular, our data on expropriations prior to 1960 – have been collected specifically for this study. We describe these data briefly here, leaving a more detailed explanation to the Data Appendix, before turning to our analysis of the data.

Data Sources

We make use of two basic types of data. First, we collect data on outstanding debt and foreign direct investment liability positions for much of the twentieth century. In some cases, we do not have values of liabilities outstanding, but only an indicator that a country had such liabilities. We use these data to infer to collection of countries who had the potential to default upon debts, or expropriate foreign direct and other equity investment. Second, we combine this with data on sovereign theft.

Foreign Investment Positions.—

In our analysis, we restrict attention to countries that actually owed debts to private foreign creditors, or had been the location of foreign direct investments. Only this set of countries have the potential to default or expropriate foreign direct investment holdings.

We first obtained our estimate of debtor countries, building on earlier work summarized in Tomz and Wright (2007). The appendix to the working paper version of this paper contains more details as to the data collection procedure. However, it can be briefly summarized as follows. First, we obtained estimates of the stock of debt owed by the government of a country to foreign private sector creditors, excluding trade creditors, for the period 1970 to the present from the World Bank’s *Global Development Finance* publication. These stock estimates were used to construct an indicator variable for years in which a country was a debtor, which was then taken back through the interwar period using estimates of bond issuance from the *Adler Sovereign Bond Database*. For the period before 1914, borrowers were identified through a comprehensive search of archival and secondary sources for six major capital markets – Amsterdam, Berlin, Frankfurt, London, New York, and Paris – as discussed in Tomz (2007).

Data on foreign direct investment positions was likewise assembled from a number of sources. For the most part we were limited to data on US foreign direct investment positions abroad. This leaves open the possibility that some countries – particularly former European colonies with direct investments from their colonial power – may have been omitted. We hope to address this weakness of the data in future work. For the modern period, data for the United States comes from the Bureau of Economic Analysis database on the U.S. International Investment Position, combined with data on U.S. direct investment abroad. For the earlier period, we rely on Commerce Department benchmark surveys which begin in 1929.

In a small number of cases, we find countries that appear to have no foreign liabilities outstanding according to our measure, but who nonetheless default or expropriate foreign investments. In these cases, the country is reclassified as having gross foreign liabilities, and an intensive search of primary and secondary sources is conducted to impute the first data in which foreign liabilities were accumulated.

Sovereign Default.—

Any study of sovereign defaults must begin with a definition of precisely what is meant by the term “default”. A sufficient condition for a default to have occurred is that a country not meet its obligations, either on paying interest or repaying principal, within any grace period specified. We also regard a country as having defaulted if it makes an exchange offer that “contains terms less favorable than the original issue” in the case of sovereign bonds, or if “a rescheduling of principal and/or interest is agreed to by creditors at less favorable terms than the original loan. Such rescheduling agreements covering short- and long-term bank debt are considered defaults even where, for legal or regulatory reasons, creditors deem forced rollover of principal to be voluntary” (Beers 2004). We restrict attention solely to debts incurred to private creditors, and thus exclude official credits. Consequently, our measure of default differs from the dates of Paris Club rescheduling agreements. We also limit attention to defaults of national governments, and exclude defaults by provinces or cities.

It is also necessary to define what is meant by the “start” of a default as well as what sequence of events triggers the “end” of a default. We consider defaults on both interest and principal of a debt, and date the start of a default to either the date of the first missed payment or rescheduling, or the date at which a country announces that it will stop servicing its debts. A default is defined to have ended when a majority of creditors agrees to a settlement with the country. A country is defined to be in default in a given year if it was in default for any month of that year, with the exception of defaults that are settled in January of a given year which are assumed to imply that the country is not in default for that year. Data on defaults on bank loans is drawn from Beers (2004), while the dates of defaults on sovereign bonds were drawn from Beers (2004) for the modern period, Suter (1990) for the middle decades of the 20th Century, and from Duggan and Tomz (2006) for the 19th and early 20th Centuries.

By our definition, 106 countries defaulted a total of 250 times since the end of the Napoleonic Wars. The most common defaulters were Ecuador, Costa Rica, Mexico, Uruguay, and Venezuela, each of which experienced at least 8 distinct spells of default. Ecuador and Honduras stand as the most long-standing defaulters; beginning with their initial loans as members of the Central American Confederation in the 1820s, each has registered nearly 120 years in default. New defaults have occurred in every decade since the 1820s, and they were most common during the Latin American crisis of the 1980s, when more than 50 countries (about 40 percent of all nations that owed money to private foreign creditors) failed to pay in full on time. The largest defaults in present value terms were the Argentine default of 2001, which was associated with privately held debt instruments with a principal of \$90 billion and was even larger once deferred interest was included, and the Russian repudiation of 1918 which was valued at the time at 1.7 billion pounds sterling (although around half of these debts were held by other governments, including about 800 million pounds of inter-allied war debts).

Expropriation and Nationalization.—

Previous researchers have collected data on expropriations, nationalizations and other takings by foreign governments for subsets of the Twentieth Century. In a famous series of studies, Kobrin (1984) presented data on the number of expropriations from 1960 to 1979, while Minor (1994) extended these data from 1980 to 1992. Hajzler (2007) provides a recent update to 2006. These studies complement earlier work by Williams (1975) for the period 1956 to 1972.

To the best of our knowledge, no systematic database of expropriations exists for the first half of the Twentieth century despite the large number of expropriations and nationalizations known to have taken place in the period after the Second World War

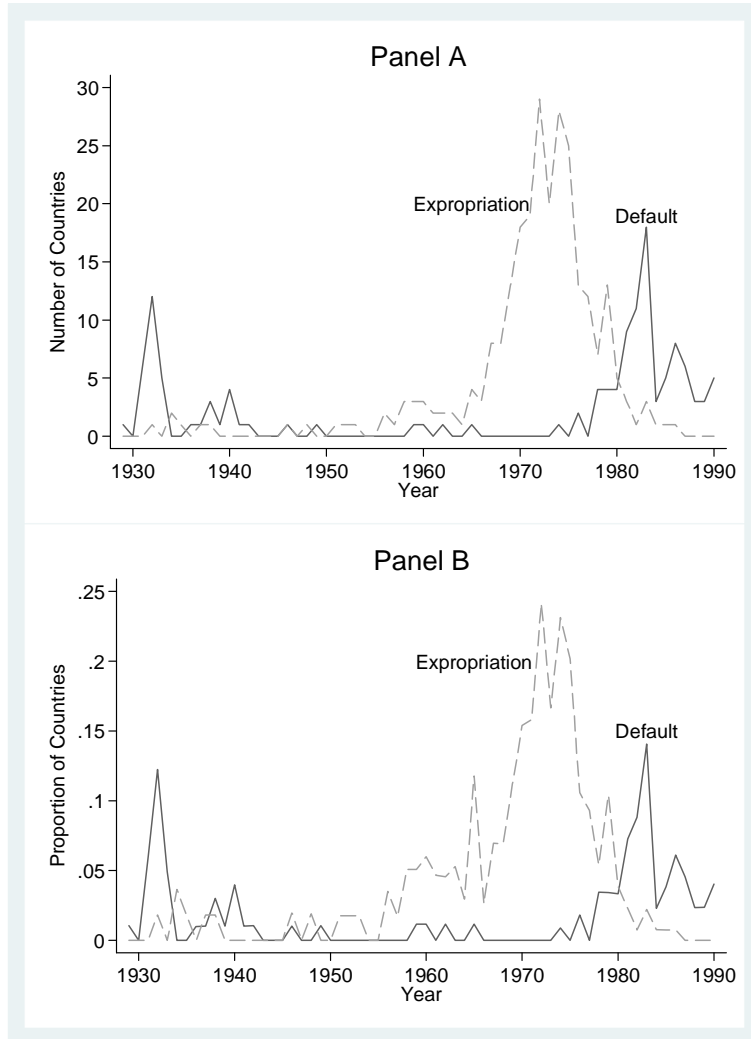
associated with communist takeovers in Eastern Europe, as well as by countries newly independent of their colonial masters around the rest of the globe. To rectify this absence, we collected data on expropriations and other forms of sovereign takings from a range of primary and secondary sources. The details are presented in the Data Appendix which also contains a list of the expropriations we uncovered. Our intention is to build upon this database in future work. We also hope that this document will provide a useful starting point for other researchers interested in this area.

As in earlier studies, multiple acts of expropriations within a country during a given year have been classified as individual expropriations (note that, in contrast to Kobrin and Minor we do not count expropriations in different industries as different acts of expropriation).

Incidence of Defaults and Expropriations

As a first cut, we present the results of two analyses that were conducted with these data. First, in the first panel of Figure XX we present plots of the time series of the number of expropriations, and the number of defaults, that occurred in any given year from 1929 to 1990. In the second panel, the same data is presented but as a proportion of the set of countries that had outstanding external liabilities.

A couple of observations emerge immediately from the graph. First, there is a clear sense in which one can talk about “crises” of default and expropriation: periods in which many countries default and/or expropriate foreign assets. Second, when one looks at debt and direct investment separately, it is clear that these cycles are not closely synchronized. While the debt defaults of the 1930’s and early 1940’s are correlated with a modest upswing in expropriation of direct investment assets,



the massive surge in expropriations at the end of the 1960s and early 1980's were associated with little at all default. Moreover, expropriations dwindled in the 1980s at the same time that the Latin American Debt Crisis began. Third, although there is a sense in which expropriations peaked at the same time as commodity prices in the early 1970s, expropriations take off well in advance of the rise in commodity prices. Thus while it is not implausible that many expropriations are associated with the extraction of greater rents in response to windfalls associated with the movements in the prices of natural resources, the pattern is not exact.

The lack of correlation between expropriations and defaults is interesting from the perspective of theory. Indeed, one prominent strand of theories argues that default and expropriation are deterred by the effect such actions have on a country's reputation, where reputation is defined in terms of the belief that a country is of some "good" type. To the extent that defaults and expropriations are both informative about the same type, these theories would suggest that expropriations and defaults should be clustered together in time. The evidence depicted above then seems to point against this "broad" view of reputations, although it need not be inconsistent with a narrower view of reputation in which default and expropriation signal different narrower aspects of a country's type.

We further probe the link between default and expropriation in Table XX which groups countries with foreign liabilities according to whether or not they defaulted but did not expropriate, expropriated but did not default, both defaulted and expropriated, or neither defaulted or expropriated. As is immediately obvious, most countries fall into one of two groups: those that did not engage in any form of sovereign theft, and those that engaged in both. Nonetheless, there exist a substantial number of countries which engaged in one form of sovereign theft and not another. Understanding the different forces that led to these decisions is likely to be very informative about the underlying incentives countries have to honor foreign investments.

Defaulted	Expropriated	
	No	Yes
No	Australia, Bangladesh, Barbados, Belgium, Belize, Botswana, Burundi, Canada, Cyprus, Denmark, Djibouti, Dominica, Fiji, Finland, France, Grenada, Iceland, Ireland, Israel, Korea South, Lesotho, Luxembourg, Mali, Mauritius, Netherlands, New Zealand, Norway, Papua New Guinea, Portugal, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Seychelles, Singapore, Solomon Islands, Spain, Sweden, Switzerland, Tunisia, UK, USSR(1917-1991), Vanuatu	Algeria, Benin, Chad, India, Indonesia, Kenya, Lebanon, Malaysia, Mauritania, Myanmar, Nepal, Oman, Pakistan, Somalia, Sri Lanka, Swaziland, Syria, Thailand
Yes	Austria, Bulgaria, Burkina Faso, China, Czechoslovakia, Germany, Germany West, Greece, Guinea-Bissau, Hungary, Italy, Ivory Coast, Jordan, Korea North, Nigeria, Paraguay, Poland, Romania, South Africa, Turkey, Uruguay, Vietnam, Yemen North, Yemen, Zimbabwe	Angola, Argentina, Bolivia, Brazil, Cameroon, Central African Republic, Chile, Colombia, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Gabon, Gambia, Ghana, Guatemala, Guinea, Guyana, Haiti, Honduras, Iran, Iraq, Jamaica, Japan, Liberia, Madagascar, Malawi, Mexico, Morocco, Mozambique, Nicaragua, Niger, Panama, Peru, Philippines, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Trinidad and Tobago, Uganda, Venezuela, Yugoslavia, Zambia

In the next Section, we turn to a discussion of the forces that economic theorists have emphasized as being important in the decision to honor foreign investments.

CONCLUSION

Foreign investments in both debt and equity are subject to the risk that the foreign government may, directly or indirectly, interfere with their repayment. Despite this similarity, and despite substantial literatures devoted to examining the phenomena of sovereign default and expropriation of direct investments separately, little has been done to compare and contrast the two. In this paper, we have made a first attempt at examining the interrelationship between debt default and the expropriation of direct investment – what we have referred to as sovereign theft – in both theory and practice.

We have found that, despite the obvious similarities between debt and equity, defaults on debt and expropriations of equity investments have been remarkably asynchronous in practice. This is despite the fact that there have been distinct waves of both default and expropriation. One possible explanation for this asynchronicity is the fact that there have been substantial shifts in the composition of foreign liabilities in developing economies first away from direct investment towards debt, and more recently back to direct investment and portfolio equity. In the 1970s, when direct investment was a greater proportion of foreign liabilities, expropriations reached their historical peak. In the decade that followed, foreign investments were increasingly channeled into sovereign lending which then culminated in the Debt Crisis of the 1980s. Perhaps partly in response to this crisis, direct investment and portfolio equity have reemerged as an important source of foreign liabilities for developing economies.

Whether this shift back towards direct investment leads to a further round of expropriations remains to be seen. Any attempt to forecast the matter must think

hard about the incentives countries face when they consider expropriating foreign assets. We reviewed one class of theories that emphasizes the trade-off between expropriation out of desperation, and expropriation out of opportunism, and argued that theory predicts that desperation should be the predominant source of a motive to expropriate. Thus we look forward with some foreboding to the inevitable decline in commodity prices over the next decade.

Of course, our theories have abstracted from many issues that no doubt also play a role in determining both the level of direct investment, and the incentives to expropriate. One obvious issue that we have abstracted from is the fact that the projects that are funded by debt issues, and in particular sovereign debt issues, are in many cases quite distinct from the projects then tend to be financed by direct investment. To the extent that this is true, and to the extent that the risk properties of these investments differ, the models introduced above would make different predictions about the likelihood of observing defaults and expropriations at different points in the cycle.

Another issue that we have mostly abstracted from is that direct investment typically brings with it some measure of control. In the models above, we used control as one justification for allowing the direct penalties associated with expropriation to exceed those associated with debt default. However, control may be important in other respects. It may, for instance, be an additional motive for expropriation, particularly when the control extends to assets with special national or strategic significance. Future research into this question could be very profitable.

The issue of control is also related to deeper issues in the design of financial contracts, and the incentives they give to managers of firms. Much of the corporate finance literature has examined the incentive of firms to issue debt versus equity, and has tended to emphasize the trade-off between agency costs and monitoring costs. These issues are no doubt important when it comes to thinking about the sectors of the economy that are most exposed to foreign direct investment, as opposed to foreign

debt. To the best of our knowledge, no one has examined the effect of political risk on this trade-off. This should be a focus of future work.

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DATA APPENDIX

The following list records all of the acts of expropriation that we have uncovered for the period between 1929 and 1959.

Table 2: Cases of expropriation 1900-1959

1. 1906: Nicaragua annulled timber contracts
2. 1911: Nicaragua abrogated various concessions to foreign firms
3. 1912: Italy established state monopoly on life insurance
4. 1918: U.S.S.R. nationalized most of the economy

5. 1919: Cuba expropriated buildings belonging to American citizens
6. 1922: Poland seized a German factory
7. 1925: Cuba expropriated land belonging to American citizens
8. 1925: Mexico creeping expropriation against foreign oil firms
9. 1928: Guatemala abrogated concessions involving chicle
10. 1932: Iran abrogated concessions in oil sector
11. 1934: Japan creeping expropriation against foreign oil firms
12. 1934: Mexico creeping expropriation against foreign oil firms
13. 1935: Japan creeping expropriation against foreign oil firms
14. 1937: Bolivia nationalized foreign oil
15. 1938: Mexico nationalized foreign oil
16. 1945: Czechoslovakia nationalized most of the economy
17. 1946: Yugoslavia nationalized most of the economy
18. 1946: Poland nationalized most of the economy
19. 1947: Bulgaria nationalized most of the economy
20. 1947: Hungary nationalized most of the economy
21. 1948: Burma nationalized inland waterways
22. 1948: Hungary nationalized most of the economy
23. 1948: Romania nationalized most of the economy

24. 1948: Argentina nationalized the railroads
25. 1948: Czechoslovakia nationalized most of the economy
26. 1950: China nationalized most of the economy
27. 1951: Iran nationalized foreign oil
28. 1952: Burma forced the partial sale of foreign mining interests
29. 1952: Bolivia nationalized mines
30. 1953: Iraq nationalized electric utilities
31. 1953: Guatemala expropriated foreign-owned agricultural land (UFCO)
32. 1956: India nationalized life insurance
33. 1956: India nationalized a gold mining firm
34. 1956: Egypt nationalized Suez, banking, tobacco, insurance
35. 1957: Indonesia nationalized Dutch property
36. 1958: Indonesia nationalized Dutch property
37. 1958: Yugoslavia nationalized US-owned buildings
38. 1958: Argentina forced the sale of a foreign utility
39. 1959: Indonesia nationalized Dutch tobacco firms
40. 1959: Cuba began nationalizing most of the economy
41. 1959: Brazil expropriated foreign utility companies