A MODEL OF EXECUTIVE INITIATED LEGISLATIVE INTERACTION BETWEEN THE PRESIDENT AND THE CONGRESS IN BRAZIL, 1988-1996

An Extensive Form Game with Asymmetric Information Approach

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1. Introduction

On January 6, 1999, Itamar Franco, governor of Brazil's second most populous state Minas Gerias, declared a unilateral 90-day moratorium on the repayment of his state's estimated $13.5 billion debt to the federal government.[2] The moratorium touched off a 35% devaluation of the real and collapsed Brazil's fixed exchange rate on January 18. Ironically, this moratorium had no effect on federal finances because the central government simply kept Minas Gerias's disbursements, which were worth more than the state's monthly debt repayments of $67 million.[3] The problem of state governments becoming heavily indebted to the federal government has been a reoccurring feature of Brazil's recent political economy and has contributed to the country's substantial debt. Since the passage of the 1988 constitution, the federal government has already bailed out state fiscal crises three times, in 1989, 1993, and 1995. By 1998, state and municipal governments owed an estimated 106 billion dollars or 13.7% of the estimated $774 billion GDP, while total government debt ran about $280 billion or 36% of 1998's GDP.[4] [5] Why have state deficit spending and fiscal crises been allowed to persist? Why haven't the President and the Congress passed effective reforms to end this costly pattern?

Besides the state fiscal crises, two other deleterious features of the Brazilian political economy have repeatedly occured. First of all, every national heterodox economic plan since 1986 has been enacted primarily through the use of the presidential decree instead of bills passed through Congress. President José Sarney used decree power to enact the Cruzado Plan in 1986, the Bresser Plan in 1987 and the Summer Plan in 1989. In 1990, President Fernando Collor de Mello decreed the Collor Plan and in 1994, finance minister Fernando Cardoso decreed the Real Plan.[6] Secondly, Congress consistently passed or compromised on only about 30-40% of the bills concerning economic reform.[7] This number seems extremely low considering the drastic and perpetual nature of Brazil's recent economic crises. Why has the Brazilian political

[2] Rohter, Sec A: 5.
[3] Zellner.
[4] IMF 1998, pg. 140.
[5] Vast majority of the debt was owed to the federal government. *Ibid*. p. 36.
[6] Carey and Shugart, ch 7.
[7] Ames, Barry.

economy, specifically the legislative interaction between the President and the Congress, repeatedly produced the three outcomes described above?

These three trends, which illustrate the federal government's problem of enacting effective and credible economic policy, have significantly contributed to the numerous economic crises Brazil has faced over the last fifteen years. During this period, the country's substantial debt, inherited from the military regime, grew relatively faster than the GDP. The heavy debt service lead to volatile and rampant inflation, which reached nearly 3,000% in 1993 and destroyed the local currency. Between 1986 and 1994, Brazil had four different currencies called the cruzado, the novo cruzado, the cruziero, and the real. Brazil's large fiscal deficits also made the country susceptible to the collapse of the fixed exchange rate and the 35% devaluation in January of 1999.

This paper seeks to explain the three trends through an extensive form game with asymmetric information approach. An extensive form game is a type of game theoretic analysis, which models a possible set of strategic interactions and assumes that the players act rationally by making decisions to maximize their utility. This game illustrates a simplistic interaction between the President and the Congress that explains both whether the President proposes a law, a decree, or nothing and Congress's decision concerning the legislation. In this model, the Congress's decision is an automatic function of an all-encompassing variable called the 'Political Situation'. The President chooses between proposing a law, a decree, or nothing by subjectively determining the probability he has of passing a law and a decree through Congress and comparing the expected utilities he will receive for all three choices. The proposal of this extensive form game model argues that interaction between the 'Political Situation', the President's subjective beliefs, and the President's and legislature's utilities created the federal government's problems of enacting credible and effective economic policy. The model is included at the end of this article.

This game theory proposal offers an alternative understanding of the federal government's problem to the belief that Brazil's politicians are simply corrupt or to general time inconsistency theories of government behavior.[8] Time inconsistency theory argues that, in a competitive market economy, the welfare of the private sector is maximized when the government establishes a constant set of economic policies, specifically the money supply and

[8] Calvo.

the tax rate. The problem of time inconsistency emerges because a benevolent government, which tries to maximize the utility of the public sector, has the incentive to re-optimize policy every time it is given the opportunity to do so. This incentive results from the fact that the government's decision does not fully incorporate the dynamic implications of its actions. In particular, while the public sector conditions their behavior on the entire future stream of policy variables, the government re-optimizing at a future date 't' does not consider how policy variables affect actions before 't'. In contrast to this argument, the model proposal focuses on how the specific structure of incentives within the political system contributes to the federal government's tendency to enact ineffective and non-credible economic policy.

The main data for this article came from the book *Executive Decree Authority* by John Carey and Matthew Shugart and the article *"A Theory of Legislative Parties in Brazil"* by Barry Ames. The Carey and Shugart book describes the quantities, the subject content, and the Congressional responses to the presidential decrees from 1985 to 1996. The Ames article includes a list of all of the economic reform legislation proposed by the President and included in either the *Latin American Weekly Report: Brazil*, *The Economist Country Report*, or the Brazilian financial newspaper, the *Gazette Mercentil*, from 1989 to 1998. Mainly due to the data available, this paper will focus only on the years from the passage of Brazil's new constitution, in 1988, to 1996.

The article will be organized as follows. The first main section will present a conceptual overview of the extensive form game. The next section will establish the model assumptions of the President's and the Congress's goals and preferences. The third main section will provide a technical explanation of how the President chooses which type of legislation to propose and the model's equilibria. The final section will provide some examples of how to understand these three trends through the model and how these trends have significantly contributed to Brazil's recent economic crises.

2. Conceptual Overview

The conceptual overview provides a non-technical description of the model. The variable, 'Political Situation,' is located at the top of the model and represents everything that has, is, will or may even possibly occur. In other extensive form games, 'Nature' is used to

represent the same concept. Some of the more important variables the 'Political Situation' incorporates into the model include the popularity of the politicians and various economic variables, such as the inflation rate.

There are four nodes of the three options D, which represents a decree, N, which represents proposing nothing, and L, which represents a law. Each node is numbered one through four and reflects the different outcomes of the passage of laws and decrees through Congress. In node one, the President could pass either a law or a decree through Congress. In node two, the President could only pass a decree because a law would be blocked. In node three, both a decree and a law are blocked, and in node four, a law passes while a decree is blocked.

The two numbers in parentheses at the bottom of the four possible outcomes in each node and in the middle of each node represent the President's and the Congress's respective utility values. The order of the president's utility values is exactly the same in each node, while the order of the Congress's values is different. The different order or structure of Congress' utility values in each node creates the different outcomes pertaining to the passage of laws and of decrees through the Congress. The Congress's utility values should be understood according to their order rather than through their exact numerical values or differences. The order of both sets of utility values is critical to this model and will be discussed in the next section.

Technically, the 'Political Situation' makes the first move in the model and determines which node of utility preferences the Congress holds. As previously stated, the Congress is a function of the 'Political Situation' where, given a specific policy within a certain 'Political Situation', the Congress automatically 'chooses' a node and determines the fate of the policy. This model assumes that the Congress has complete information about both the 'Political Situation', which includes the exact policies the President will propose, and its own preferences and behavior. While these assumptions are a gross simplification of the legislative process, they are necessary to specify the interaction between the President and the Congress in the model.

The asymmetric or one-sided information approach, illustrated by the dashed horizontal line which connects the nodes, indicates that the President decides between D, N, or L without knowing which node of utility preferences the Congress holds. The President makes his decision by first subjectively determining the probabilities he has of passing a law ($\hbar$) and a decree (ψ)[9] through Congress based on his personal beliefs about which node Congress holds. He then

[9] Professor Mendoza suggested the use of these variables.

compares the expected utilities he will receive for all three choices and picks the type of legislation that gives him the highest expected utility. Thus, it is possible for a President to believe he is facing one node, while in reality the Congress holds a different node. The twelve equilibria of the model, which represent the fate of the legislation, are the direct result of the type of legislation proposed by the President and the node of utility preferences held by Congress. The third section of this paper will explain the mathematics behind the President's decision and the twelve equilibria of the model.

3. The Model's Assumptions about the Goals and Preferences of the President and the Congress

The model's assumptions about the goals and preferences of the President and the Congress are based on data and an understanding of the way that Brazil's presidential democracy functioned during the time period. The model assumes that the primary goal of the President is to enact economic reform or change the status quo of the economy for three main reasons. First of all, Title I, Article III of the 1988 Brazilian Constitution lists guaranteeing national development as one of the state's five objectives. Secondly, Presidents Collor, Franco, and Cardoso have all held strong neo-liberal economic beliefs, which can be seen in the numerous privatization and liberalization legislation proposed by all three. Finally, the last four Presidents have all assumed responsibility for dealing with economic crises and for assuring the international economic community, such as the IMF and international investors, that the Brazilian economy is healthy and stable.

Before establishing the model's assumptions of the President's preferences, it is necessary to present a summary of the constitutional powers of the President and the Congress, and the data reflecting their actual legislative practices. The 1988 Constitution created a balance of legislative powers that favored the executive in the passage of laws. Part of this power comes from the executive's right not only to initiate legislation, which is shared with the Congress, but from the sole right to initiate policy in important areas. For example, the President has the exclusive right to propose laws that determine the size of the armed forces, increase the salaries

of the public sector, relate to judicial organization, and pertain to budgetary matters.[10] [11] The 1988 Constitution also granted the President both a package and a line-item veto. In response, the Congress needs an absolute majority to pass legislation and to override both of the President's vetoes.

Since the passage of the 1988 Constitution, the executive branch has been the main source of new laws. The percentage of new laws originating in the executive branch was 64% during the Sarney Administration (1985-1990), 76% during the Collor Administration (1990-1992) and 83% during the Franco Administration (1992-1994).[12] It is interesting that between 1985-1994, the percentage of new laws coming from the executive branch steadily increased. This trend partly explains the reason why the Ames data set only focused on laws of economic content proposed by the President.

What does the Ames data set reveal about the legislative practices concerning executive initiated laws of economic content? First of all, it is difficult to determine exactly what should constitute a law in this data set. Should each different subject matter in a set of 51 proposals be considered a law or should all 51 proposals be considered individual laws? By assuming that each different general subject matter will constitute of a law, this paper found that Congress passed only between 30% to 40% of the laws in this data set. This number also includes the compromises that always either decreased the President's proposed spending cuts or increased wage ceilings. This percentage indicates that, despite the constitutional balance of powers, it was fairly difficult for a President to pass this type of law through Congress.

The 1988 Constitution further strengthened the President's legislative powers by granting the executive the sole, non-delegated authority to decree. According to Article 62, the President has the right to issue decrees or provisional measures (MP) in "relevant and urgent" cases. Officially, decrees have the force of law, without Congressional approval, for a 30-day period. Article 62 also established that these measures were to be submitted immediately to Congress, which had the 30-day period to decide whether to convert the MP into law. An unconverted decree automatically became null and void at the end of this period.

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[10] A third source of control could be the president's tight control over the budgetary process. Article 167 alone states that Congress is not permitted to initiate programs not included in the president's budget and all amendments to the annual budget must be compatible with the multiyear budget plan specified by the president. (Mainwaring and Shugart, p. 61).

[11] Ibid.

[12] Carey and Shugart, p. 223.

Since 1985, provisional measures have been used by all of the Presidents to enact significant portions of their legislation. The chart below presents the number of decrees compared to the number of new laws for each President.

Number of Decrees vs. New Laws during each Presidential Administration[13]

	Sarney 1985-90	Collor 1990-92	Franco 1992-94	Cardoso 1995-96
New Laws	705	464	148	?
Decree	$356 - 209/147_2$	160	505	702

2. 209 = the number of decrees from 1985 to 1988, 147 = number of decrees from 1988-1990

First of all, it is important to establish that the variable 'New Laws' includes laws that originated as decrees. The chart overall illustrates that there was a steady increase in the number of decrees per year since 1985. The chart also indicates that about 25% of Collor's new legislation and that about 77% of Franco's new legislation remained in decree form. The percentage of decrees with economic content also increased. For example, 96 or 60% of Collor's decrees, as compared to 28% of Sarney's decree's from 1988 to 1990, pertained to either anti-inflationary, liberalization, or privatization measures. Unfortunately, the chart does not provide data on the number of bills vs. decrees and whether the bills originated in the executive or legislative branch. In the case of Collor's presidency, the Congress eventually made only 70 or 44% of the 160 decrees law, indicating that 394 laws originated elsewhere.

One important reason provisional measures have been widely used is because the 1988 Constitution did not provide clear limitations on this power. Article 62 places no restrictions on which areas are susceptible to presidential decree. Since 1988, decrees have been used to enact legislation ranging from the daily administration of government to national heterodox stabilization plans. Also, the 1988 Constitution was completely silent on whether a President may reissue an expired or rejected decree. Within the first year after the ratification of the new constitution, President Sarney reissued 19(13%) of his expired decrees establishing an important precedent. In two years, President Collor reissued 25(16%) of his decrees once, 17(11%) of his decrees twice, and 3(2%) of his decrees five times. The only legal limit on presidential decree power came from the Supreme Court who ruled in June of 1990 that provisional measures expressly rejected by the Chamber of Deputies could not be decreed again.[14]

[13] *Ibid*. p. 205-215.
[14] *Ibid.* p. 209. I believe that the vote must be decided by an absolute majority but the book only specified floor vote.

At the same time, Congress has also failed to provide a significant check on the president's decree power. In May of 1989, Congress passed Resolution no. 1, which documented a Congressional procedure for dealing with decrees. Resolution no. 1 established that a joint committee would first rule on the admissibility (whether the decree fulfilled the requirements of "relevancy and urgency"), the constitutionality, and the merit of each provisional measure. If the decree satisfied the above requirements, Congress would either accept or reject it in a floor vote. Ignoring minor procedural differences, an accepted decree was then treated like any "other piece of legislation".[15] Between 1989 and 1990, a joint committee ruled 119(91%) decrees admissible and Congress reached a final decision on 120(83%) decrees. However, between 1990 and 1992, a joint committee again ruled 123(91%) decrees admissible, but congress only reached a final decision on 84(54%) decrees.

Another important reason that Presidents have widely used decrees stems from the numerous, weakly disciplined parties in Congress. The chart below presents the estimated number of parties in the Chamber of Deputies and the Senate.

Number of Parties[16]

	Chamber	**Senate**
1990	8.65	5.54
1994	8.13	6.08

Not only are there a large number of parties in each chamber, but the decimal places represent the difficulty of defining a political party due to the frequent party switching and the fairly uncorrelated voting behavior of each party. During the 1991-1995 legislature of 598 Congressmen, there were 262 cases of party switching.[17] In the 1994 Chamber of Deputies, the highest percentage of seats was held by the Brazilian Democratic Movement Party (20.9%), followed by the Liberal Front Party (17.3%), while the rest of the 16 registered parties held between .2% and 12% of the seats. In the 1994 Senate, the Brazilian Democratic Movement Party held 27.2% of the seats, the Liberal Front Party held 22.2% of the seats, and the rest of the 8 registered parties held between 1.2% and 13.6% of the seats. Many scholars, such as Ames (1998) and Mainwaring and Scully (1995), have argued that the problems facing Brazil's party system are largely the result of the open-list and proportional representation electoral system.

[15] Carey and Shugart, p. 204.
[16] Mainwaring and Scully, p.365.
[17] Mainwaring and Shugart, p. 81.

Based on this understanding of the constitutional powers of the President and the Congress, and the data reflecting their actual legislative practices, what does the model assume about the President's utility preferences? This paper has previously stated that the President's four utility values at the bottom of each node are exactly the same. The four utility preferences at the bottom range from a 3.0 to a 2.67, with 3.0 providing the highest utility. The presidential preference 3.0 occurs under the passage of a law, while the 2.9 is placed under the passage of a decree. This paper argues that Presidents prefer passing laws rather than decrees for two main reasons. Legislation enacted through laws tends to be more legitimate and less controversial than decreed legislation. Secondly, laws have more potential to permanently change behavior because there is less uncertainty concerning their future. For example, it is difficult for Congress and citizens alike to know that the president has no intention of reissuing the decree or if the President intends the decree to permanently change society.

The last three presidential preferences on the bottom of each node have the following order; decree passes (2.9), law is blocked (2.8), and finally decree is blocked (2.67), for two main reasons. First of all, the President prefers having a decree passed (2.9) rather than having a law blocked (2.8) because although both the choice to pass a decree and having a law blocked indicate a certain limit on presidential power, the decree offers a limited short-term potential for changing behavior while the blocked law does not. Second of all, the president prefers having a law blocked (2.8) over having a decree blocked (2.67) because of the relative levels of presidential weakness each outcome implies. In the Ames data set, roughly 60% to 70% of the executive's proposed bills failed. In comparison, the paper previously stated that Congress expressly rejected only 5% of Sarney's decrees and 6% of Collor's decrees within the 30-day limit. Due to the relative likelihood of having a decree pass Congress as compared to a law, the model assumes that a rejected decree indicates a greater level of presidential weakness.

Finally, the presidential preference connected to the outcome nothing proposed (N) is the lowest utility (2.6) in every node, excluding number three, where it is the highest (4.0). The presidential preference is lowest in nodes one, two, and four, because in these nodes the President could have passed either a decree, a law, or both. Thus, this model assumes that even passing a decree is better than allowing the status quo to remain. However, if the President ended up facing the payoff structure in node three, he would have been better off proposing nothing (4.0). This assumes that the President prefers to 'save face' rather than to fail at passing

legislation. It might seem contradictory that an executive, whose main goal is to change the status quo, would receive the highest utility of the model from proposing nothing when faced with a structure of congressional incentives that would block both a decree and a law. However, this model argues that in order to change the status quo, the President must not become a 'lame duck' by consistently failing to pass either laws or decrees through Congress. Therefore, by proposing nothing when Congress would have blocked both types of legislation, the president maintains his opportunity to change the status quo.

In contrast to the President, the main goal of Congress is more difficult to establish. Somewhat similar to United States legislators, re-election has also been a significant objective the Brazilian Chamber of Deputies[18]. The chart below presents the re-election behavior of the chamber of deputies in 1986 and 1990.

Re-election in the Chamber of Deputies, 1986 and 1990[19] [20]

	No. of deputies elected	Ran for deputy next time	Ran for other Position$_1$	Re-elected deputy next time
1986	495	324 / 65.5%	31 / 6.3%	185 / 57.0%
1990	503	354 / 70.3%	54 / 10.7%	217 / 61.3%

1. Includes governor, vice-governor, senator, or substitute senator

First of all, the chart illustrates that in 1990, about 71.1% of the Deputies elected in 1986 either ran for Deputy again, or ran for Governor, Vice Governor, Senator, or Substitute Senator. In 1994, this number increased to 81.1% of the Deputies elected in 1990. The chart also indicates that about 65% to 70% desired to remain in the Chamber of Deputies for the next term.[21] However, the percentages of Deputies seeking re-election to the Chamber of Deputies are somewhat misleading because they do not indicate the number who ran for mayorships in the middle of their terms. In 1988, 120 or about 20% of the members from both the Chamber of Deputies and the Senate ran for mayor.[22] Overall, these numbers illustrate that about 70% to 80% of the Deputies desired to remain in politics at least longer than one legislative term, which indicates that re-election, to both the Chamber and other important positions, was a significant objective.

[18] Mayhew (1974) argues that re-election is the primary objective of US congressmen. Mainwaring, p. 245.
[19] Ibid.
[20] Unfortunately, I was unable to find data for the Senate.
[21] While the percentage of deputies seeking re-election may seem low according to the United States' standards, this number is actually high compared to many Latin American democracies. In Argentina, only 22% of deputies elected in 1993 had served in the lower Chamber between 1983 and 1993. In Mexico and Costa Rica, immediate re-election is banned. Ibid.
[22] Mainwaring, p. 246.

However, the influence Governors and Mayors have on congressional behavior complicates a purely re-election based assumption. Due to Brazil's balance of federalism, Governors and Mayors have been powerful political actors with significant autonomy from the federal government.[23] The Governors, in particular, have tremendous control over state resources and their support is critical to winning important elections in their states. An important way for Congressmen to develop and maintain their support is to bring congressional 'pork barrel' legislation home to the governor.[24] Numerous academic studies, such as Ames (1998) and Samuels (1998), have found that the largest predictor of congressional voting behavior was not party identification, but rather whether pork legislation for their respective state was involved. This pattern has led the IMF, in the 1988 *Staff Country Report of Brazil*, to write that the Congress "has tended to act like a 'national Congress of state and municipal legislators'".[25] The model assumes that the primary objective of Brazilian Congressmen is to maintain the critical support of their respective Governors and Mayors through bringing home 'pork' and not supporting legislation disapproved of by important state politicians.

Each node in the model represents a specific combination of congressional attitudes towards the President's policy and Congress's desire to take responsibility for that policy. The chart below presents the two congressional attitudes represented by each node.

The Congressional Attitudes Underlying Each Node[26]

	Agrees with Policy	**Disagrees with Policy**
Delegating/Ceding Power	*Node 1* Law: Passes Decree: Passes	*Node 2* Law: Blocked Decree: Passes
Establishing/Protecting Power	*Node 4* Law: Passes Decree: Blocked	*Node 3* Law: Blocked Decree: Blocked

The top row indicates whether or not the Congress agrees with the President's proposed policy and the first column represents the concept of issue ownership, or whether the Congress is willing to accept responsibility for the policy. When the Congress agrees to take responsibility for the policy, it is both establishing and protecting its power from the President through not accepting decreed legislation. However, when Congress is unwilling to take responsibility for

[23] Mainwaring and Shugart, p. 83.
[24] Although 'pork barrel' legislation was never explictly defined, it implies federally funded government projects.
[25] Ibid. p. 33.
[26] This chart was suggested to me by Professor Munger.

dealing with the President's policy, it is willing to accept a decree regardless of whether it agrees or disagrees with the policy.

The structure of utilities in nodes one through three is based on the assumption that Congressmen prefer dealing with decrees because it decreases their likelihood of taking responsibility for economic policy unfavorable to important state politicians. In these nodes, the congressional payoffs tend to be higher for dealing with decrees rather than laws. In node one, the order of utilities goes from highest to lowest with a passed decree (3.0), a blocked decree (2.9), a passed law (2.8), and a blocked law (2.65). In node number two the structure of utilities is a passed decree (3.0), a blocked decree (2.9), a blocked law (2.8), and a passed law (2.67). Finally, the order of node three's utilities is: a blocked decree (3.0), a blocked law (2.9), a passed decree (2.8), and a passed law (2.67). In node number three, the congressional utility for blocking a decree is greatest to indicate the strong possibility that Congress will block that legislation.

The fact that node four never occurred in my data reveals an important characteristic about the Brazilian political economy. The order of node four's congressional utilities is law passes (3.0), decree is blocked (2.9), law blocked (2.8), and decree passes (2.67). Node four indicates that the Congress agreed with the policy and that it absolutely wants to take responsibility for the legislation. This node represents the Congress's desire for more legitimate legislation and a more legitimate role in the legislative process. The fact that this node never occurred in my data indicates that these qualities are lacking from the Brazilian Congress.

4. Technical Explanation

Now that the model's assumptions about the President's and the Congress's goals and preferences and the structure of the utility preferences have been established, this section will describe how the President decides which type of legislation to propose and the model's equilibria. The President chooses between a decree, proposing nothing, and a law by first deciding the probabilities he has of passing a law ($\hbar$) and a decree (ψ) through Congress, as previously described in the first section. Because $\hbar$ and ψ are independent events, the president believes that the probability of node one occurring, which is the probability of a law passing and a decree passing, is $\hbar\psi$ or the product of the two probabilities. Thus the President believes that

for a given piece of legislation, he has a (1-$\hbar$)ψ probability of facing node two, a (1-$\hbar$)(1-ψ) probability of facing node three, and a $\hbar$(1-ψ) probability of facing node four. For example, if the President decided that $\hbar$= .3 and ψ= .95, he thus believed that he had 28.5%, 66.5%, 3.5%, and 1.5% chance of ending up on nodes one through four respectively.

The President then determines the expected utility values for proposing a law, a decree, and nothing. Each utility's letter variables are used to calculate the three expected utilities. Conceptually, the President's expected utility for choosing a decree is determined as follows. In each node, the congressional utilities for a passed decree and a blocked decree were compared. Then the President's utility of the higher of the two congressional utilities was entered into the expected utility function for each respective node. For example, on node one, the President's utility for choosing a decree is 2.9 or b-c because the congressional utility 3.0 is greater than 2.9. Finally, the resulting presidential utilities from each node were multiplied by the probability that the President believed each respective node would occur. The addition of the resulting products was added together which results in the President's expected utility function for choosing a decree. The equation is presented below.

$$E(\text{Decree}) = (b-c)(\hbar\,\psi) + (b-c)(1-\hbar)\,\psi + (-c-d)(1-\hbar)(1-\psi) + (-c-d)(\hbar)(1-\psi)$$

The President's expected utility for proposing a law is determined according to the same method.

Next the President determines whether his highest utility can be achieved by proposing nothing. The expected utility of proposing nothing is presented in letter variable form below.

$$E(\text{Nothing proposed}) = e(\hbar\,\psi) + e(1-\hbar)\,\psi + a(1-\hbar)(1-\psi) + e(\hbar)(1-\psi)$$

$$= (e-a)(\hbar + \psi) + (-e-a)\hbar\,\psi + a$$

By adding in the utility's numerical values and setting the equation greater than the President's highest utility for proposing a law or a decree (3.0), the executive's expected utility becomes the equation below.

$$-1.4(\hbar + \psi) - 6.6\,\hbar\,\psi + 4.0 > 3.0 \qquad (**)$$

When the above equation holds true, the President's expected utility for proposing nothing is greater than the highest utility he can receive from proposing a law or a decree. Thus when

equation ** is true, the President proposes nothing and when the equation is false he decides between a law and a decree.

If the President's highest utility cannot be achieved by proposing nothing, then he compares the expected utility of a decree and a law by setting the expected utility of the decree greater than the expected utility of the law. This is represented in the inequality below.

$$E(\text{Decree}) > E(\text{Law})$$

$$(b\text{-}c)(\hbar\,\psi) + (b\text{-}c)(1\text{-}\hbar)\,\psi + (\text{-}c\text{-}d)(1\text{-}\hbar)(1\text{-}\psi) + (\text{-}c\text{-}d)(\hbar)(1\text{-}\psi) >$$

$$b(\hbar\,\psi) - d(1\text{-}\hbar)\,\psi - d(1\text{-}\hbar)(1\text{-}\psi) + b(\hbar)(1\text{-}\psi)$$

$$\hbar > \psi - \{c / (b + d)\} \qquad (***)$$

Equation *** states that even if the President believes a decree is more likely to pass, $\psi > \hbar$, it can still be optimal for a President to submit a law depending on the utility values. Thus as long as equation *** is true, the President proposes a law and when the equation *** is false, the President submits a decree. The inequality below numerically compares the President's expected utility from issuing a law and a decree.

$$\hbar > \psi - .66 \qquad (*)$$

Equation * states that as long as the difference between ψ and $\hbar$ is less than .66, the President should submit a law. Does the parameter .66 make sense in accordance with the data presented earlier estimating that about 30% to 40% of the laws and that about 95% of the decrees pass Congress? Unfortunately, in order to apply the data to the variables $\hbar$ and ψ, it is necessary to resolve the difference between the exact meaning of the data and the variables $\hbar$ and ψ.

While the variables $\hbar$ and ψ represent the President's beliefs of the probability of a law and a decree passing, the data represents the probability of legislation passing, once it has already been submitted to the Congress. It is probable that the data is larger than the actual chances of passing a law and a decree due to a selection bias. The selection bias arises because it is likely that the President never submitted the legislation that had high probabilities of failing. Since there is no data representing the exact values of $\hbar$ and ψ, data applied through these variables is technically theoretical and represents an educated estimation. Due to the large

quantity and extremely controversial content of many decrees,[27] this paper argues that their selection bias is minimal and from this point on, will consider the average $\psi = .95$. In contrast, this paper advocates a more considerable bias concerning the data on passing laws because of the relative difficulty of passing this type of legislation through congress and estimates that the average $\hbar = .3$.

With the average values of $\hbar$ and ψ established from the data, it is possible to understand how equation * is meaningful. If the President decides that both variables have their average chances of passing, then equation * becomes .30 > .29 and the President submits a law. In this case, the decision is very close because the difference between the two numbers is very small. However, if the President believes that probability of passing a decree is above average, perhaps $\psi = .99$, and the probability of passing a law is below average, perhaps $\hbar = .2$, then equation * is .20 > .33 and the President's decision to submit a decree is more obvious. However, what happens when $\psi <= .66$ and $0 < \hbar < 100$? Equation * indicates that the President should submit a law even if there could be a 0% chance that the law would pass and 66% chance that a decree would pass. Therefore, this model assumes the limit $\hbar >= .01$, so that when $\psi <= .67$, the President's optimal decision is to propose nothing because equation ** is true. This assumption is limiting because it prevents the model from accurately representing those laws that have absolutely no chance of passing through Congress. Listed below are the relationships according to which the President makes his decision.

i..if $\psi <= 67$ (**T) = Propose Nothing

ii.if $\psi >67$ (**F) & *T = Law

iii.if $\psi >67$ (**F) & *F = Decree

Thus, the President decides which type of legislation to propose based on his subjective beliefs of the probabilities of a law and a decree passing Congress.

The twelve equilibria of the model represent the fate of the President's legislation and provide the President's and the Congress's utilities. In the twelve equilibria listed below, *i, ii, and iii* refer to the President's legislative decision and 1, 2, and 3, refer to the node that Congress ends up on. The first letter in the brackets indicates the President's choice and the second letter

[27] One decree from the Collor Plan of 1990 which froze bank accounts in excess of $650 dollars removing. 80% of liquid assets from circulation provides an excellent example. (Shugart and Carey, p. 207)

represents the Congress' decision. The final column indicates the President's and the Congress's respective equilibria utilities.

Model Equilibria

1. P(ii) C(1) = {L, P} => *(3.0, 2.8)*

2. P(iii) C(1) = {D, P} => *(2.9, 3.0)*

3. P(i) C(1) = {NP} => *(2.6, 0)*

4. P(ii) C(2) = {L, B} => *(2.8, 2.8)*

5. P(iii) C(2) = {D, P} => *(2.9, 3.0)*

6. P(i) C(2) = {NP} => *(2.6, 0)*

7. P(ii) C(3) = {L, B} => *(2.8, 2.9)*

8. P(iii) C(3) = {D, B} => *(2.67, 3.0)*

9. P(i) C(3) = {NP} => *(4.0, 0)*

10. P(ii) C(4) = {L, P} => (3.0,3.0)

11. P(iii) C(4) = {D, B} => (2.67, 2.9)

12. P(i) C(4) = {NP} => (2.6, 0)

Thus, the equilibrium of the model directly depends on both the President's type of legislation proposed, which derives from his beliefs about $\hbar$ and ψ, and the structure of utilities or the node determined by Congress.

5. Three Legislative Trends

The final section will provide some examples of how the model explains the three trends and how these trends have significantly contributed to Brazil's recent economic crises. However, first this section will place these three trends in a historical context by summarizing how Brazil's twenty-one year military dictatorship (1964-1985) contributed to the political and economic environment of the post-1988 period. The military regime, which began on April 1, 1964, based its legitimacy on the operation of a pseudo-democracy and Brazil's economic stability and growth. The military government never attacked liberal democracy as an ideal, only the perceived flaws of Brazil's democratic system. Although the armed forces concentrated the power in their own hands, they kept a tightly controlled Congress in session and held regular

elections. The regime also disbanded all pre-1964 parties and created a two party system, in which the pro-military forces congregated in the National Renewal Alliance Party (ARENA) and the opposition supported the Brazilian Democratic Movement Party (PMDB). The Military's state-led industrial development, in which state investment consistently surpassed private investment, focused on building productive capacity in the areas of energy, heavy industry, and capital-intensive goods. Due to insufficient domestic savings and technological dependence, among other factors, the military financed this development through heavy foreign debt and inflationary practices.[28]

The economic legacy left by the regime's state led industrial development was mixed. Partly as a result of Brazil's large internal market, abundant natural resources, highly controlled political system, and increased foreign capital, the country experienced a 7% per year average compound rate of real GDP growth.[29] By the middle of the 1980's, Brazil emerged as a global industrial power with the tenth-largest economy in the world. However, the military's heavy borrowing from abroad left a total external debt of about $94 billion in 1982 with a total debt service of $19.2 billion for that year. The heavy debt burden, which equaled about 80% of the exports in 1982, has contributed to two decades of battle with inflation and volatile real GDP growth. At the same time, Brazil's increasing wealth was accompanied by a rapidly worsening income distribution. The multiple of the income share of the richest 20% wage earners to that of the poorest 20% increased from 14 in 1960 to 28 in 1995.[30] By the early 1990's, the wealthiest 10% of income earners received 48% of the national income while the rest received 52%.[31] These numbers indicate that Brazil is one of the countries with the most unequal income distributions in the world.

The political legacy left by the military regime also included many negative characteristics. When the military disbanded the pre-1964 parties, it disrupted the party system's identities and stable roots in society. Because the pre-1964 parties were not well institutionalized, due to a previous history of frequent state interventions, they almost entirely disappeared during the dictatorship. The disruption of the pre-1964 parties, along with the current electoral rules, is a significant contributing factor to the present party system's weakness.

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[28] Diamond, Lipset, and Linz, p. 132
[29] Europa, p. 155.
[30] Ibid. p. 154.
[31] Ibid.

The lack of a strong party system to organize politicians at the national level has allowed the state has become the organizing force. This encourages politicians to become clientelistic and 'pork' oriented because local matters are more important to their careers than national ones. Also, during the dictatorship, the military expanded executive authority and reduced the legislative role of Congress. The dictatorship expanded presidential power through a series of Institutional Acts and Constitutional Amendments that permitted the president to decree laws "in cases of urgency or relevant public interest", such as in the case of national security or public finances.[32] The military executive enacted on average of nine decrees per month. Congress was only allowed *ex nunc* nullification of the decree and if Congress did not take action within 60 days, the decree was automatically "approved".[33] In practice, Congress rarely rejected a decree and leaving most decrees to become automatically "approved". By stripping the Congress of a meaningful legislative function and disbanding the pre-1964 parties, the military fostered a legislature whose main activity was pursuing 'pork' legislation.[34]

The sources of the first trend of repeated state fiscal deficits and debt crises came both from the military's political and economic legacy, and the current environment. The 1988 Constitution shifted resources away from the federal government to the municipalities with state resources remaining basically unchanged. At the same time, the Constitution also shifted more spending obligations, in the areas of education, health, and public works, onto the states as the federal government reduced its size.[35] To a certain degree, the increased spending by states was a natural response to their new responsibilities. The extremely high and volatile inflation between 1988 and 1994 also allowed the states to become reliant on the inflation tax and practice of host of unsustainable fiscal policies. However, the considerable influence states have been able to exert in congress has encouraged the Senate to spare the states from harsh fiscal adjustment through federalizing state bonded debt, rolling over the debt, and rescheduling the debt into longer maturities with relatively lower interest rates.[36]

How is the first trend understood through the model? According to the Ames data set, very few state fiscal reforms, in either the form of a law or a decree, were even proposed by the President between 1988 and 1996. The only example in the Ames data set came from President

[32] Carey and Shugart, p. 199.
[33] *Ibid*.
[34] Mainwaring and Scully, p. 368.
[35] IMF 1988, p. 133.

Collor, who as part of the Collor Plan in 1990, decreed a provision granting the federal government police powers over state and municipal finances. He later dropped the provision in October 1991 as his popularity plummeted and his impeachment loomed. However, in 1993, the Congress passed a constitutional amendment that prevented the states from issuing new bonds until the year 2000.[37] Thus, the model argues that even if the President believed his probabilities were as high as $\hbar$ =.01 and ψ = .67 (which makes equation ** true with 3.00378 > 3.0), he still believed that he could achieve his highest utility from proposing nothing. In the case of state fiscal reforms, this paper argues that Congress was holding the structure of utility preferences in node three, representing that it both disagreed with the policy and was protecting its power. In other words, the Congressmen were willing to take responsibility for disagreeing with the policy in order to gather support from the power politicians in their respective states. The resulting equilibrium of (4.0, 0) indicates that the Presidents received their highest utility from proposing virtually no state fiscal reforms during this period.

Before describing how the model explains the second trend, it is interesting that all of the national stabilization plans have been almost entirely heterodox. Orthodox stabilization plans for lowering inflation focus on reducing the money supply and fiscal deficits while raising interest rates to reduce purchasing power. In contrast, heterodox plans attempt to freeze prices and incomes, eliminate indexation, and increase credit in order to stimulate an increase in production to absorb the excess supply of money.[38] All of the national stabilization plans were almost entirely heterodox because an orthodox plan was not politically feasible. However, all of the plans prior to the Real Plan failed to slow inflation for longer than a couple of months because they failed to control the federal and state fiscal deficits and the money supply. The 1994 Real Plan was finally successful because it targeted a mechanism, the exchange rate, which was relatively safe from the influence of the political system. The model explains why the Presidents did not even choose to decree orthodox plans according to the explanation in the preceding paragraph.

How is the second trend understood through the model? This paper argues that the President believed that, at the least, his chances of passing a decreed heterodox plan through Congress were high for numerous reasons, such as the atmosphere of economic crises. If the

[36] Ibid. p. 31.
[37] Ibid. p. 30.

President believed his probabilities were $\hbar$ =.1 and ψ = .8 (which makes equation * false with .1 > .19), he believed that he could achieve his highest utility from issuing a decree. According to the model, the President's beliefs were $\psi > .67$, which makes equation ** false, and $\psi - \hbar > .66$, which makes equation * false. In the case of the heterodox stabilization plans, this paper argues that Congress was often holding the structure of utilities in node two, which represents that it disagreed with the policy, but that it was willing to delegate its authority to the President. In other words, the Congressmen wanted to avoid supporting policies unfavorable to their important state politicians, but they wanted the economic crises dealt with. The resulting equilibrium of (2.9, 3.0) indicates that both the Congress and the President achieved a high utility from the decreed heterodox stabilization plans.

Finally, how is the third trend, that few laws concerning economic reform pass Congress, understood through the model? The model states that the President believed $\psi > .67$, which makes equation ** false, and that $\psi - \hbar < .66$, which makes equation * true. For example, if the President determined his probabilities were $\hbar$ = .4 and ψ = .98 (which makes equation * true with .4 > .32), he believed that his optimal decision was still to propose a law. In this case, Congress could either be holding the structure of utilities in node two or node three. Both of these nodes represent that the Congress disagrees with the policy, however, node two indicates that the Congress was willing to delegate power with the President, while node three indicates a lack of willingness. Both of the frequently resulting equilibria, (2.8, 2.8) for node two and (2.8, 2.9) for node three, indicate that Congress received a higher utility for blocking laws than for passing laws.

Now that the way these three legislative trends are understood through the model has been described, the final section will briefly describe how these three trends have contributed to Brazil's struggle with debt, inflation, and, more recently, currency crises. Many of Brazil's economic problems can be understood in relation to the country's large debt. The chart below presents a comparison of GDP and total external debt.

[38] Chaffee, p. 16.

GDP and Total External Debt[39]

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*
GDP[1]	***517***	***495***	***498***	***481***	***506***	***546***	***590***	***611***
External Debt[2]	71.5	81.4	93.9	98.5	104	104	109	120
Debt/GDP	*13.8%*	*16.4%*	*18.9%*	*20.4%*	*20.6%*	*19%*	*18.8%*	*19.6%*

1988	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*
610	***630***	***603***	***611***	***608***	***638***	***676***	***704***	***724***	***747***
117	115	120	121	129	144	151	159.3	180	200
19.1	*18.6%*	*19.9%*	*19.8%*	*21.2%*	*22.6%*	*22.3%*	*22.6%*	*24.9%*	*26.8%*

[1] At market prices in billions of constant 1995 US$

[2] Total external debt in billions of constant 1995 US$

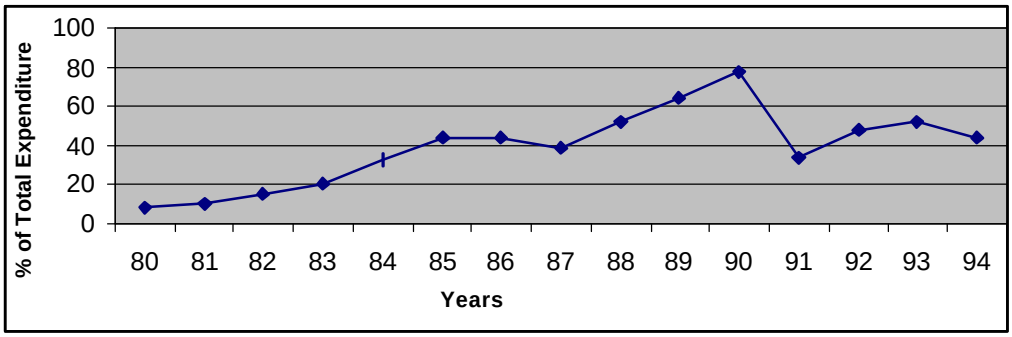
As previously stated, the chart illustrates that the military dictatorship left the country with the debt looming around 20% of its GDP. However, the chart also indicates that since 1988, the total debt has continued to grow relatively faster than the GDP reflected by the fact that the debt was 19.1% of the GDP in 1988, but by 1997, the debt had reached 26.8% of the GDP.

The states and municipalities contributed to a significant portion of the debt. In 1992, while the total external debt was 21.2%, the public sector's net domestic debt was 19% of the GDP. However, .8% of the public sector's debt came from the federal government, 8.4 % came from the states and municipalities, and 9.7% came from public enterprises.[40] Through their persistent financial crises, by 1992, almost half of the public sector's total net domestic debt came from the states and municipalities. The public sector's debt grew to 30.2% GDP in 1997 partly because of the 'federalization' of state debt and weaning the entire government off of the inflation tax. In 1997, 16.8% of the debt was held by the federal government, 12.5% was held the by states and municipalities, and .9% was held by the public enterprises.

The heavy debt service and interest payments of the federal government contributed to the extremely high and volatile inflation rates. Between 1980 and 1989, the total debt service each year fluctuated between $11.5 billion dollars (1985) and $19.2 billion dollars (1982). These high repayments forced the country, on February 20, 1987, to announce a unilateral moratorium on its medium- and long-term debt until the IMF provided a $1.4 billion dollar loan in September of 1988. Between 1990 and 1992, the debt service dropped to an average of $8.35 billion each year but then it continued to steadily increase reaching $38 billion dollars in 1997. The graph

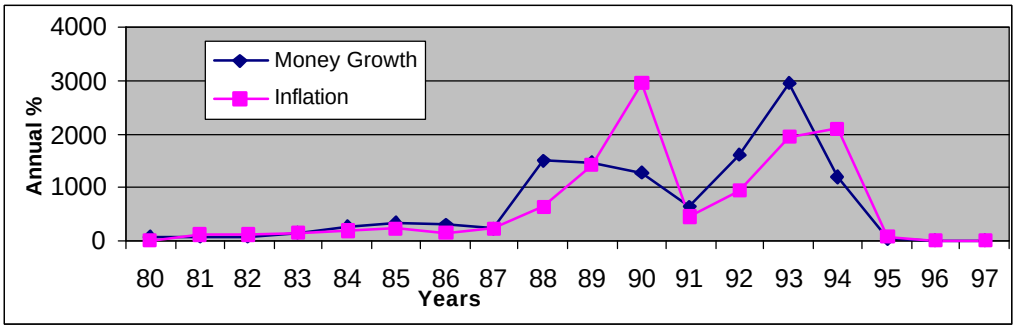
[39] World Bank Indicators.
[40] IMF 1998, p 196.

representing the interest payments of the federal government illustrates the debt burden on the federal government.



Interest Payments of the Federal Government[41]

The graph illustrates that the interest payments have taken up a significant portion of the federal government's total expenditure, peaking at about 80% of the total expenditure in 1990. A comparison of the graph representing the federal government's interest payments to a graph representing the money growth and inflation reveals a peak around the year 1990. The graph below presents the money growth and inflation.



Money Growth and Inflation[42]

Although debate remains between the structuralists, who argue that an expansion of the money supply follows inflation and the monetarists, who argue the opposite,[43] this chart appears to support the monetarists' view. These two charts suggest that the government drastically

[41] World Bank Indicators.
[42] Ibid.
[43] Chaffee, p. 13.

increased the money supply partly in response to the heavy debt burden. The inflation tax allowed the president to obtain resources without raising and collecting taxes, or seeking legislative support.

The rampant inflation devastated the local currency. In 1986, as part of the Cruzado Plan, President Sarney cut three zeros off of the old cruzeiro and established the cruzado, which was later replaced by the novo cruado in January 1989 as part of the Summer Plan. President Collor, in his Collor Plan, returned the currency to the cruziero with one cruzeiro equaling 1,000 novo cruzados. Between 1990 and 1993, all three currencies, the cruzado, novo cruzado, and the cruzeiro, were in circulation at the same time. In August 1993, the cruzeiro again lost three zeros becoming the cruzeiro real and finally came to rest as the dollarized real in 1994.[44] Looking at the official Brazilian currency to US dollar exchange rate, between 1980 and 1993, the Brazilian currency was so worthless that $1 US could literally buy billions of the local currency units. By the end of 1993, the currency began to improve and, as a result of the fixed exchange rate Real Plan, the real reached parity with the dollar by the middle of 1994.

According to the Krugman model, the fixed exchange rate and persistent fiscal deficits contributed to the 35% devaluation of the real in 1999 and the collapse of the fixed exchange rate on January 18, 1999.[45] The Krugman model is based on the two assumptions that the government cannot increase its credit from the private sector and that the quantity of money is demand determined under a fixed exchange rate. Based on these assumptions, Krugman argues that government's budget constraint can be reduced to the real public deficit as a function of the change in foreign reserves. If the government maintains a deficit, the fixed exchange rate will have to collapse in the long run because the foreign reserves will eventually run out. The exchange rate collapses exactly on the date that there is a sudden drop in money demand, or a speculative attack on the central bank's foreign reserves, as agents who have lost faith in the currency seek to exchange their domestic money balances. In the Brazilian case, Governor Franco's debt moratorium, described in the introduction, was the main cause of the speculative attack that touched off a 35% devaluation of the real. Unlike the 1997 East Asian crises, domestic fiscal imbalances were the underlying cause of the collapse of the Brazilian fixed exchange rate.

[44] Ibid. p. 11.
[45] Krugman.

6. Conclusion

The limitations of the model originate from a variety of sources. One source results from the model's simplistic representation of the interaction between the President and the Congress. For example, even though the model assumes that the President always prefers to pass laws instead of decrees, many popular presidents, such as Cardoso, used decrees to legislate uncontroversial issues partly because it was more convenient. Second, this model naively assumes that the President never misrepresented his true intentions in order to manipulate the Congress. Third, unlike the model, the interactions between the President and the Congress can be better understood as a continual process of communication and negotiation. Finally, the model does not include the opportunity for compromise to occur.

In the area of further research, this paper recommends the publication of more information concerning the content and the numbers of both decrees and laws in the second half of this decade. It also recommends developing ways to apply the model to Brazil's political economy through the development of specific variables that can be inserted into the place of the 'Political Situation'. One possible avenue could be gathering data on the president's popularity from Brazil's IBOPE poll, in order to look at how those numbers affected the legislative outcomes. This paper also advocates a cross -country comparison studying the relationship between the degree of party fragmentation and the type of legislation proposed and enacted. Finally, this paper recommends developing ways of applying this model to countries that have experienced a similar situation to Brazil. Some possible examples may be Argentina, Chile, or the Eastern European nations.

In conclusion, this paper noticed three legislative trends in the Brazilian political economy from 1988 to 1996. First, the President and the Congress did not pass effective reforms to end the continual problem of state fiscal deficits and debt crises. Second, every national heterodox economic plan since 1986 was decreed. Finally, Congress passed only about 30% to 40% of the laws pertaining to economic reform. This paper has attempted to understand these trends through the creation of an extensive form game with asymmetric information. The extensive form game modeled a well-defined executive initiated legislative interaction in which the game's twelve equilibria were the result of the 'Political Situation', the President's subjective

beliefs, and the structure of the President's and the Congress's utilities. In order to establish the model's assumptions about the goals and preferences of the President and the Congress, this paper presented a summary of the constitutional powers of each branch and data reflecting their actual legislative practices. The final section provided some background information about the three trends, described how to understand them through the model, and discussed how they have significantly contributed to Brazil's recent economic crises. Through the development of the model, this paper proposed an understanding of the Brazilian political economy that explained the federal government's problem of enacting effective and credible economic policy.

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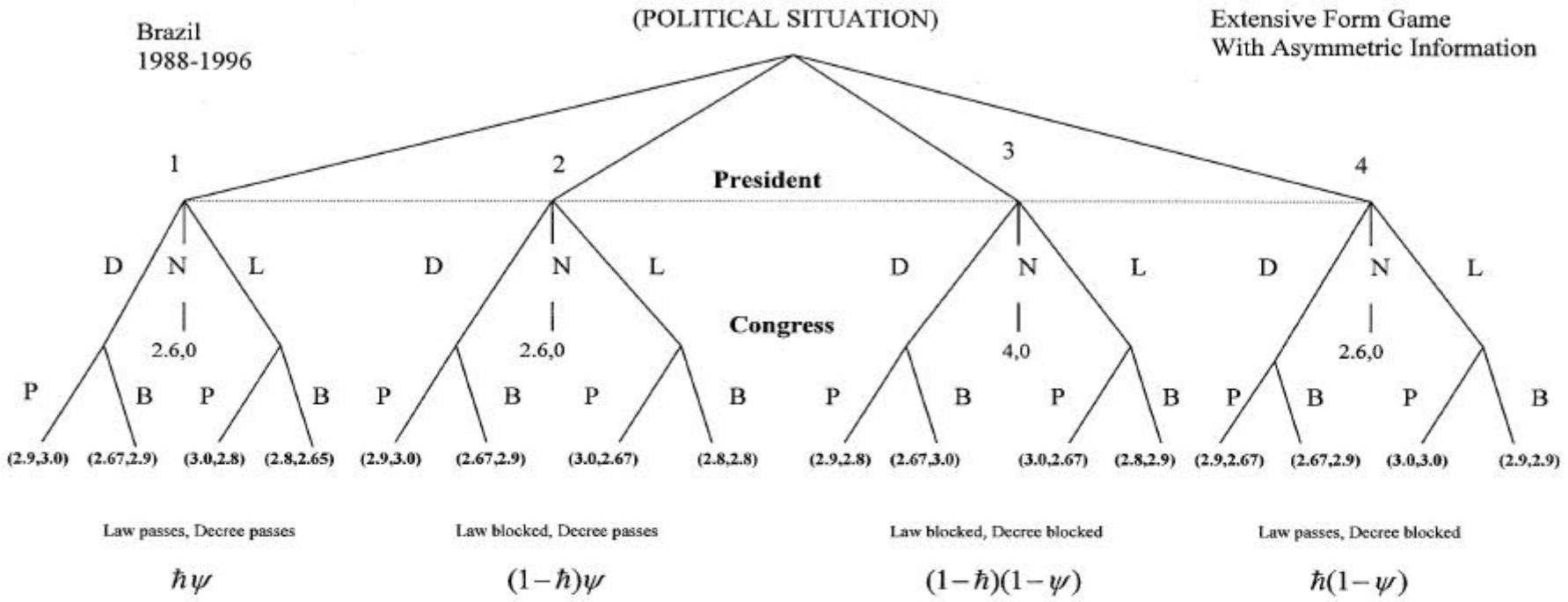

President's Utility:		**How President Makes his Decision**	**Equilibria-Nodes: 1,2,3**
A=4, b=3, c=132, d=2.8, e=2.6 a>b>b>c>d>-c-d>e ***4>3.0>2.9>2.8>2.67>2.6***	Law Decree Pass $\hbar$ ψ Block $(1-\hbar)$ $(1-\psi)$	I. E(decree)>E(law) $*\hbar > \psi - .66$ ¡ $\hbar > .01$! data $\hbar = .3$ $\psi = .95$	1. $P(ii)C(1) = \{L, P\} \Rightarrow (3.0,2.8)$
Congress; Utility:	**Congress:** Function of 'Political Situation'	II. E (nothing proposed)>3.0 $**-1.4(\hbar+\psi)-6.6\hbar\psi\_4 > 3.0$	2. $P(iii)C(1) = \{D, P\} \Rightarrow (2.9,3.0)$
b=3.0, p=.132, r=2.8 b>b-p>-r>-p-r ***3.0>2.9>2.8>2.67***	**President's Subjective Beliefs** *President chooses* $\hbar$ & ψ	i.if $\psi < 67(**T)$ =Propose Nothing ii.if $\psi > 67(**F)$ & $*T$ = Law iii.if $\psi > 67(**F)$ & $*F$ = Decree	3. $P(i)C(1)$ = Nothing Proposed $\Rightarrow (2.6,0)$ 4. $P(ii)C(2) = \{L, B\} \Rightarrow (2.8,2.8)$ 5. $P(iii)C(2) = \{D, P\} \Rightarrow (2.9,3.0)$ 6. $P(i)C(2)$ = Nothing Proposed $\Rightarrow (2.6,0)$ 7. $P(ii)C(3) = \{L, B\} \Rightarrow (2.8,2.9)$ 8. $P(iii)C(3) = \{D, B\} \Rightarrow (2.67,3.0)$ 9. $P(i)C(3)$ = Nothing Proposed $\Rightarrow (4.0,0)$