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Rent Seeking and Democracy in Latin America: What Drives What?

by

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Abstract*

Drawing on previously unused objective institutional data, we provide evidence for the causal link between rent-seeking behavior and democracy in Uruguay, a country where both rent-seeking behavior and political shifts have varied widely in the last 80 years, but where ethnolinguistic heterogeneity and income inequality have remained historically low. The latter helps better identify some “pure” political interactions and how they are linked with rent-seeking outcomes. We find that the presence and duration of democratic regimes appear to have been conducive to a decrease in rent-seeking actions in Uruguay, although the reduction in rent seeking does not appear to have had a bearing on the quality of democratic regime in the country. While the duration of democratic regime may impact rent-seeking behavior, rent seeking also displays a causal link to democratic duration.

Key words: Rent-Seeking, Causality, Democracy, Political Cleavage, Uruguay

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1. Introduction

In this paper we empirically examine the direction of causality between democracy and rent seeking. In fact, it has been claimed both that democratic regimes may reduce rent-seeking behavior in societies and that rent-seeking behavior may contribute to the downfall of democratic regimes. Since theoretical research shows that given reasonable conditions both are likely to occur (McGuire and Olson, 1996; Shleifer and Vishny, 1993), the actual relationship between these two variables has to be uncovered by analyzing it from empirical and historical perspectives. In fact, historically, democratic political regimes have provided stability and have helped reduce uncertainty in the population by helping to defend societies against roving bandits (Olson, 1982). This can result in an improvement and stabilization of the institutional setting of the society through the provision of clear formal and informal rules and regulations regarding the interaction of actors. Consequently, it has been claimed that rent-seeking behavior will also decrease.

On the other hand, pervasive rent seeking may translate into an increased degree of uncertainty among the population, which may send mixed signals to the market, affecting the productive process, economic performance, the organization of the country and, ultimately, the democratic process. In fact, a recent wave of empirical research focuses mostly exclusively on the link between institutional quality and economic performance (Mauro, 1995; Knack and Keefer, 1997; Chong and Zanforlin, 2004). This is particularly relevant in Latin America, where a clear understanding of the relationship between institutions, economic performance, and political regimes may help explain the seemingly puzzling choice of inward-looking policies by rulers, and especially the persistence of such policies even when it was clear that they were doomed to fail (Taylor, 1998). Perhaps the choice of government economic policies and performance has to do with Latin America's particular political setting. According to Taylor, interest groups might have played a role, especially since the politics in the region typically have been marked by dramatic cleavages between different classes and groups. Only when the costs of maintaining inward-looking policies became too high did such phases end. These factors may help explain both the choice and persistence of inward-looking development policies in the region, as well as the role played by autocratic governments in the region.¹

¹ Chong and Zanforlin (2005) contrast Olson's theory of encompassing interest with Robinson's (1997) theory of political underdevelopment, Rothbard's concept of psychic income (Coyne, 2003), and the unconstrained Leviathan

Lack of data has not allowed for an adequate study of the direction of causality between political regimes and institutional quality. The few available studies are either mainly of a descriptive nature or use indirect or subjective data that, despite being widely employed, are controversial. They also tend to use cross-country approaches that may suffer from an omitted variables problem that cannot be controlled by simply applying fixed effects.² In fact, it has been claimed that there are several problems with the use of subjective data in economic research (Bertrand and Mullainathan, 2001). For instance, in the specific case of institutional data, evaluators may be influenced by a country's economic conditions as they may assume that a specific institutional aspect cannot be severe if the country is doing well economically (Mauro, 1995). Furthermore, as there are no guidelines as to what constitutes an "expert" evaluator, assessments may be rendered essentially worthless.³ Therefore, in order to analyze this possible double causality we use a historical time-series of objective rent-seeking data based on discretionary foreign trade regulations that permits us to explore the time-series dimension of the link between rent seeking and democracy.⁴ We chose the particular case of Uruguay, a small, historically stable, and ethnically and culturally homogeneous Latin American country. Uruguay provides an excellent case from the point of view of a rent-seeking society as it represents an extreme case of discretionary trade policies that lasted for decades, first, via an import-substitution strategy that was characterized by high protective trade barriers, multiple exchange rates, and an explicit policy that allocated discretionary foreign exchange, approved import licenses, and banned imports that competed with domestic production; and second, via an export promotion strategy which, while not as explicit as the import-substitution approach, was nonetheless actively pursued for considerable periods of time (Rama, 1991).

While we find evidence that democratic processes and rent seeking are causally linked in both directions, we find that democracies per se are not conducive to improved institutions;

view of Brennan and Buchanan (2000). When taking into account the above views, Olson's idea of encompassing interest does not help explain the fact that autocratic governments may tend to act in a predatory manner even when rulers expect long-term prospects.

² Clague et al. (1996) offer a methodology that uses money supply, which they call "contract intensive money" that allows the construction of an objective database on institutional quality. The data, however, have been criticized and thus have remained virtually unused by researchers.

³ Mauro (1995) argues that the evidence for the accuracy and relevance of the indices is provided by the considerable price that clients are willing to pay in order to obtain the assessments.

⁴ There is some work in the political economy of trade protection, in particular Amelung (1989), Baldwin (1989), Hillman (1989), and Weck-Hannemann (1991). However, the emphasis is on case studies and not formal aggregate-level empirical evidence. An exception is Rama (1994), who uses some of the same data as this paper but focuses less on the political processes per se and more on trade policy issues instead.

democratic longevity, however, is. In fact, not only do we see that the longer the duration of democracy, the lower the discretionary rent seeking regulations, but also the less pervasive the rent seeking in a society. On the other hand, the causal impact of rent-seeking actions on democracies appears to be quite dramatic regardless of whether the variable of interest is democracy or duration of democracy.

This paper is organized as follows. The next section, Section 2, describes the panel autoregressive VAR empirical methodology employed in order to assess causality between our variables of interest. Section 3 describes the data employed and provides basic statistics, and Section 4 presents the evidence. Finally, Section 5 summarizes and concludes.

2. Empirical Methodology

In this paper we focus on the dynamic relationship between our variables of interest as well as on the direction of causality and their implied contribution to the possible correlation among these variables. The first step is to analyze the dynamic relationship between rent seeking and democracy. The objective is to examine how the behavior of one given variable is related to the future behavior of the other. This future behavior has two aspects: effect and predictability. The first deals with whether changes in one variable have a lasting impact on another variable. The second examines whether the behavior of one given variable helps predict the behavior of the other. Our methodology consists of estimating and testing vector autoregressions (VAR) in a panel setting that has the following form:

$$y_{i,t} = A(L)y_{i,t} + B(L)x_{i,t} + \mathbf{h}_t + \mathbf{m}_i + \mathbf{e}_{i,t} \quad (1)$$

$$x_{i,t} = C(L)y_{i,t} + D(L)x_{i,t} + \mathbf{f}_t + \mathbf{y}_i + \mathbf{u}_{i,t} \quad (2)$$

where y and x represent the two variables of interest, rent seeking and democracy; L is the lag operator; A , B , C , and D are vectors of coefficients; \mathbf{h}_t and \mathbf{f}_t are unobserved time effects; \mathbf{m}_i and \mathbf{y}_i are unobserved fixed country effects, and $\mathbf{e}_{i,t}$ and $\mathbf{u}_{i,t}$ are regression residuals. Note that we also control for other determinants, Z , in particular the log of output, the export orientation of the country in any given year, and whether the country was following import substitution policies in any given year. The subscripts i and t denote country and time, respectively.⁵

⁵ The above was the most comprehensive specification employed. Data restrictions did not allow for alternative specifications. However, as mentioned above, fixed effects were employed throughout.

As is standard in non-structural VAR analysis, no cross-equation parameter restrictions are imposed, we allow for a free cross-equation error covariance, and we interpret each equation as a reduced-form regression. We have chosen the optimal lag structure for the panel VARs through likelihood ratio tests. As described above, by testing for the dynamic relationship between institutions and inequality, we are interested in exploring the impact that changes in one variable, say x (*rent-seeking*), has on the other, say y (*democracy*). The direct impact of x (*rent-seeking*) on y (*democracy*), given the past history of y (*democracy*), is given by the sum of the coefficients on all lagged x (*rent-seeking*). Using the properties of the lag operator, this impact would be equal to $B(1)$. From an estimation of the VAR, we can obtain the point estimate of $B(1)$ and, for the purpose of statistical inference, its associated standard deviation.⁶

The second step is to examine whether a variable, say x (*rent-seeking*), helps forecast the other variable in the system, say y (*democracy*), beyond what the past history of y (*democracy*) predicts.⁷ This is a test of Granger-causality, and, in the example above, it amounts to testing if the coefficients of the lag polynomial B are statistically significantly different from zero. Notice that the two issues of interest—namely, impact and Granger-causality—are related but not identical. There may be cases when one variable has predictive power for another, yet its impact is zero because coefficients on different lags cancel each other out. However, in the relationships we consider, it is usually the case that when the impact is statistically zero there is also no indication of Granger causality. In this context, and based on the work of Geweke (1982) and Chong and Calderón (2000), we take a more complete approach than unidirectional Granger-causality tests by measuring the degree of linear dependence and feedback between two panel series x (*rent-seeking*) and y (*democracy*). We do this by measuring the sum of linear feedback from x (*rent-seeking*) to y (*democracy*), linear feedback from y (*democracy*) to x (*rent-seeking*), and “instantaneous” linear feedback between x (*rent-seeking*) and y (*democracy*). Absence of a particular causal ordering implies that one of these feedback measures is equal to zero. In particular, let us denote $z_t = (y_t, x_t)'$ the vector with information on the variables x (*rent-seeking*)

⁶ From the estimated coefficients we can also obtain the long-run effect of x on y . The long-run effect takes into account both the direct impact of x on y (given the past history of y) and the autoregressive properties of y (to account for its own and cross feedback effects). Provided that y follows a stable process, the long-run effect of x on y is given by $B(1)/[1-A(1)]$.

⁷ In Granger causality tests, if x causes y , x should help predict y . That is, in a regression of y against past values of y , the addition of past values of x as independent variables are expected to contribute to the explanatory power of the regression in a statistically significant manner. Furthermore, y is expected not to help predict x , as if this is the case and y helps predict x , then other variables are causing x and y . Also, see Table 1.

and y (*democracy*), and the VAR representation for z_t is $\mathbf{G}_0 z_t = \mathbf{G}_1 L z_t + \mathbf{x}_t$, with $\mathbf{G}_1 L = \sum_{i=1}^m \Gamma_{1i} L^i$.

The proposed decomposition test is based on likelihood ratios comparing the following three system representations, as shown in Table 1. From these systems, the objective is to test a specific set of measures of linear feedback. The proposed measures to be tested are shown in Table 2 (Chong and Calderón, 2000).

In summary, the basic principle of our empirical approach to test for causality is to apply Granger causality tests to study the direction of the link between rent seeking and democracy. Unlike most studies, however, the key emphasis of our empirical work is to decompose the contribution of each direction of causality between rent seeking and inequality by using a test of linear dependence and feedback. Thus, in order to explore issues of simultaneity, we decompose the correlation between rent-seeking actions and political factors into the three possible directions, that is, democracy to rent seeking ($x \rightarrow y$), rent seeking to democracy ($y \rightarrow x$), and contemporaneous correlation ($x \cdot y$). To perform this analysis we follow the procedure for panel data developed by Chong and Calderón (2000). We report the results for two specific variables: duration of democracy and the democracy index.

3. Data

We use legislative data originally collected by Rama (1994) for Uruguay on a yearly basis from 1925-1983.⁸ This researcher painstakingly collected discretionary trade policy information published by Uruguay's Official Registry of Laws and Decrees. He constructed a rent-seeking database for this country by individually counting the number of statutes which had created, maintained, or modified a foreign-trade regulation for the benefit of a single firm or industry during the cited period. Examples are tariffs for final goods, changes in import duties for inputs, export subsidies, special exchange rates, reference prices, draw-back regimes, import licenses, export prohibitions, tax payment relief, and others. All in all, at the firm level, the available dataset contains 4,042 observations or rent-seeking actions for the time period 1925 to 1983, although depending on the empirical method not all of the information is necessarily used. The data are quite rich, as they contain detailed information on the type of private rent-seeking resolution, such as law, decree, or administrative regulation enacted, the basic area to which the

⁸ The ending year corresponds to the last published issue of the data source (Rama, 1994).

resolution was linked, either exports or imports, and the corresponding productive sector, defined at the two-digit level ISIC code.

In order to be consistent with the six-decade economic cycle that corresponds to the sample, we scale our variable of interest using data on aggregate output level at constant prices which are only available from 1935 onward.⁹ Additionally, we calculate an index where the average of rent-seeking actions during the period 1935 to 1983 equals 100.¹⁰ Table 3 presents summary statistics. Overall, we find that rent-seeking activities represent 0.45 percent of gross domestic product in Uruguay for the period 1925 to 1983, of which 47 percent of petitions may be identified with particular firms or persons. In other words, identified actions refer to those rent-seeking actions that were explicitly tied to a particular group, firm, or individual as the beneficiary of the discretionary trade policy. On the other hand, non-identified actions refer to those that were not explicitly tied to a specific beneficiary of the rent-seeking policy or action. The premise is that firms or groups that were not openly identified as beneficiaries of discretionary trade policies may have been able to take greater advantage of the system through actions such as the extraction of higher rents. Similarly, manufacturing represents the bulk of activities, with more than 81 percent, and rent-seeking regulations linked with imports outnumber those linked with exports by about 20 percentage points. Furthermore, Supreme Decrees are the legal device used most often, accounting for 67 percent of such actions. In fact, when focusing on the type of law used when issuing discretionary policies in trade, it is expected that there will be differences when rent-seeking actions are implemented through *supreme resolutions* rather than *supreme decrees* (Calderon and Chong, 2005). This is somewhat unsurprising as the latter, more frequently associated with less democratic regimes, tends to be easier to hide and undo as opposed to the former, which tends to be the product of more transparent interaction among agents. In fact, while the passing of supreme resolutions requires a lengthy and widely discussed process in Parliament, the passing of supreme decrees requires

⁹ Rama (1994) also uses exports and imports as additional deflators. When replicating our empirical work using these other deflators our findings do not change. On the interest of economy these findings are not reported but are available upon request. Data related with number of firms, the natural deflator, are not available.

¹⁰ Note that although we have individual information on rent-seeking actions since 1925, we are limited to carrying out our analysis from 1935 onward due to the lack of data for real GDP.

less of such political coordination and typically needs the approval of the Executive branch only.¹¹

With respect to tariff and non-tariff barriers, the former is slightly more predominant than the latter (five percentage points). However, this pattern varies depending on whether the political regime is a democracy or not, and whether or not the trade orientation of the country prioritizes export promotion or import substitution policies. In general, tariff barriers include (i) tariff rates or, in the case of exports, subsidy rates, (ii) the reference price used to calculate tariffs and subsidies, which are frequently used instead of the actual international price; and (iii) exchange rates, which from 1933 to 1959 were multiple exchange rates. On the other hand, non-tariff barriers include the item's position, quotas, and other non-price related barriers.

Data on democracy and duration of democracy come from the well-known Polity V data set by Gurr and Jagers (1998), which is an annual index based on three categories accounting for different characteristics of the political process: *executive recruitment*, *independence of authority*, and *political competition*. The first measures the extent of institutionalization, the competitiveness of executive selection in terms of electoral systems, and the openness of executive recruitment. The second reflects the extent to which preferences of third parties are taken into account. The third reflects the extent to which the political system enables the non-elite to influence the political elite. This index of democracy goes from zero to 10, with higher scores representing higher degrees of democracy. Additional standard controls, such as terms of trade, rates of growth, an import substitution dummy, and an export promotion dummy come from Rama (1994) and the World Bank (2004).¹²

In Table 4 we present simple correlation measures between rent seeking and democracy. We find that the former is negatively correlated with democracy (-0.43) regardless of economic sector. Furthermore, rent seeking is negatively associated with duration of democracy (-0.66) and most other measures of democracy.

¹¹ Furthermore, some regulations likely require even less political interaction, as their passage does not necessarily require approval from the higher echelons of the Executive and thus may follow a somewhat less transparent path (Calderón and Chong, 2005).

¹² Note that the results for the components of the institutionalized democracy index (say, executive regulation and political participation measures) are consistent with the result of the aggregate index. Results are available from the authors upon request.

4. Findings

Table 5 presents our basic results. In the case of Uruguay, we find that from 1935 to 1983, democracy helps predict rent-seeking actions, as the obtained causal link is statistically significant at ten percent or better. Furthermore, we find that such a causal link is negative and statistically significant at five percent or better, which means that the claims that democracies breed rent-seeking behavior are not accurate.¹³ Much to the contrary, democratic regimes help to reduce rent-seeking behavior. The causal relationship between our variables of interest holds regardless of how the rent-seeking activity is classified. In particular, the causal relationship that goes from democracy to total rent-seeking actions accounts for 72 percent of the total correlation found between these two variables. A similar such causal relationship accounts for more than 80 percent of the total correlation found in manufacturing activities, more than 50 percent in agriculture, and nearly 80 percent in services. A similar pattern is observed when analyzing the results from the perspective of trade orientation. The share of the causal relationship running from democracy to rent seeking is 86 percent and 55 percent for exports and imports, respectively. In short, the same pattern showing a causal link going from democracy to rent seeking holds in almost all subcategories considered. While it is clear that democracy is conducive to better institutional quality in a society, we find strong evidence that the opposite does not hold true. A reduction in rent-seeking activities does not appear to be conducive to an improved democratic regime in Uruguay. It appears that regardless of the country's improvements in institutional quality, it was not rewarded with improved democratic processes in the long run. In fact, not only is the correlation share that goes from rent seeking to democracy quite low, but also the direction of this causal link is statistically insignificant regardless of the trading activity or economic activity considered. This is also shown in Table 5.

Perhaps one should not be focusing on the presence of democratic regimes per se, but rather on whether such regimes are well established in the country. In order to explore this idea, we examine the duration of democratic spells in Uruguay and apply the causality tests described above. Results are shown in Table 6. The picture we find is less uniform than in the case of democracy and rent seeking. There is still a causal link that goes from duration of democracy to rent-seeking actions, but it is somewhat less compelling. There appears to be no causal link

¹³ For the sake of economy regressions results are not presented, but we would be happy to provide them upon request.

between duration of democracy and total rent seeking-actions; however, such a causal link may exist in specific economic subcategories. For instance, when analyzing the results by economic activity, we find that duration of democracy helps predict subsequent rent-seeking actions in both agriculture and manufacturing at the 5 percent level, with the share of this causal direction at approximately 47 and 56 percent of the total correlation, respectively. However, the same cannot be said in the case of services, where this causal direction accounts for only 15 percent of the total correlation and is not even statistically significant. In the case of trading activities we also find that duration of democracy in Uruguay is a statistically significant predictor of future rent-seeking actions, as the corresponding empirical test yields a t-statistic of 5 percent. Interestingly, while the causal direction from duration of democracy to rent-seeking actions accounts for 80 percent of the total correlation in exports, it accounts for only 52 percent of the total correlation in imports. On the other hand, the causal link that goes from rent-seeking actions to democratic duration is statistically significant in some cases but not uniformly so. This is the case with total rent-seeking actions, where we find that the causal relationship from total rent-seeking actions to democratic duration accounts for 60 percent of the total correlation found between these two variables. We obtain similar results in the cases of manufacturing, services, and imports. In fact, we find that the causal relationship from rent seeking to democratic duration is around 42 percent, 69 percent, and 37 percent, respectively, in relation to the total correlation found between these two variables.

In summary, while historically the presence and duration of democratic regimes appear to have been conducive to the lowering of rent-seeking actions in Uruguay, reduction in rent-seeking activities does not appear to have had a bearing on the quality of democratic regime in the country. However, we find some partial evidence to show that whereas the duration of the democratic regime may impact rent-seeking behavior, the latter also displays a causal link with democratic duration, in particular at a broad economic level.

5. Final Discussion and Conclusions

In this paper we use objective institutional historical data in order to test the causal link between presence and duration of democracies and rent-seeking behavior using an autoregressive VAR approach and methodology devised by Chong and Calderón (2000) based on Granger-causality

tests. In order to minimize recent criticisms on country heterogeneity we focus on the case of Uruguay, an ethnically homogeneous Latin American country. Overall, we find that democratic quality is causally linked with rent-seeking actions in Uruguay and that the contribution of such a link to the total correlation between these two variables is quite significant, regardless of the economic activity or trading activity considered. However, we also find that there is virtually no causal link that goes from rent-seeking behavior to democratic quality. This last finding, however, needs to be qualified somewhat as not only does democratic duration appear to display a causal link with respect to rent-seeking actions in Uruguay, but rent seeking-actions also display a causal link to democratic duration.

In the context of recent backlash against democracies in Latin America, the findings above are remarkable. While it may be argued that young democracies tend to struggle with inefficient institutional behavior, according to the conventional wisdom once democracies take hold and political constraints are minimized, institutions will improve and thus rent-seeking behavior will subside.¹⁴ Whereas both historically low institutional quality and poor democratic institutions have been fundamental shortcomings in the region (Engerman and Sokoloff, 1997), the findings here appear to show that policymakers may be well advised to further pursue democratic regimes, even in the face of hostile response, as this will help institutional development which, in turn, may further help consolidate democratic processes.

¹⁴ In fact, according to the theory of encompassing interest, rulers with expectations of having a long tenure in power have an incentive for providing good institutions, in the form of adequate property rights, an enforceable rule of law, and an efficient judiciary system (Olson, 1993; Wittman, 1989). This is because, in a repeated game context, good institutions and good policies are expected to contribute towards the growth and stability of the economy which will thus translate into higher permanent returns for the ruler in the form of taxes and other rents.

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Table 1. Feedback Decomposition Tests

System	Representation of Parameter Matrices	Var-Cov Matrix of Residuals	Causality Tests
AR System	$\mathbf{G}_0 = I_2$ $\mathbf{G}_I = \begin{bmatrix} \sum_{i=1}^m C_{1i} L^i & 0 \\ 0 & \sum_{i=1}^m E_{1i} L^i \end{bmatrix}$	$E(\xi_t^{(1)} \xi_t^{(1)}) =$ $\Sigma^{(1)} = \begin{bmatrix} \Sigma_{11}^{(1)} & \Sigma_{12}^{(1)} \\ \Sigma_{21}^{(1)} & \Sigma_{22}^{(1)} \end{bmatrix}$	Current values of $y(x)$ are functions of m past values of $y(x)$ only.
Granger System	$\mathbf{G}_0 = I_2$ $\mathbf{G}_I = \begin{bmatrix} \sum_{i=1}^m C_{2i} L^i & \sum_{i=1}^m D_{2i} L^i \\ \sum_{i=1}^m F_{2i} L^i & \sum_{i=1}^m E_{2i} L^i \end{bmatrix}$	$E(\xi_t^{(2)} \xi_t^{(2)}) =$ $\Sigma^{(2)} = \begin{bmatrix} \Sigma_{11}^{(2)} & \Sigma_{12}^{(2)} \\ \Sigma_{21}^{(2)} & \Sigma_{22}^{(2)} \end{bmatrix}$	Granger Causality: $y(x)$ does not Granger-cause $x(y)$ iff $F_{2i} \equiv 0$ ($D_{2i} \equiv 0$), for all i .
Instantaneous System	$\mathbf{G}_0 = \begin{bmatrix} 1 & -D_{30} \\ -F_{30} & 1 \end{bmatrix}$ $\mathbf{G}_I = \begin{bmatrix} \sum_{i=1}^m C_{3i} L^i & \sum_{i=1}^m D_{3i} L^i \\ \sum_{i=1}^m F_{3i} L^i & \sum_{i=1}^m E_{3i} L^i \end{bmatrix}$	$E(\xi_t^{(3)} \xi_t^{(3)}) =$ $\Sigma^{(3)} = \begin{bmatrix} \Sigma_{11}^{(3)} & \Sigma_{12}^{(3)} \\ \Sigma_{21}^{(3)} & \Sigma_{22}^{(3)} \end{bmatrix}$	Instantaneous causality between x and y if and only if $D_{30} \neq 0$ and $F_{30} \neq 0$.

Table 2. Linear Feedback Statistics and Empirical Tests

Linear Feedback	Statistic	Null Hypothesis
From x to y ($F_{x@y}$)	$\ln \left(\frac{ \Sigma_{11}^{(1)} }{ \Sigma_{11}^{(2)} } \right)$	$H_0: F_{x@y} = 0$, i.e. “x does not Granger-cause y.” That is, $ \Sigma_{11}^{(1)} = \Sigma_{11}^{(2)} $
From y to x ($F_{y@x}$)	$\ln \left(\frac{ \Sigma_{22}^{(1)} }{ \Sigma_{22}^{(2)} } \right)$	$H_0: F_{y@x} = 0$, i.e. “y does not Granger-cause x.” That is, $ \Sigma_{22}^{(1)} = \Sigma_{22}^{(2)} $
Instantaneous ($F_{x,y}$)	$\ln \left(\frac{ \Sigma_{11}^{(2)} }{ \Sigma_{11}^{(3)} } \right) = \ln \left(\frac{ \Sigma_{22}^{(2)} }{ \Sigma_{22}^{(3)} } \right)$	$H_0: F_{x,y} = 0$, i.e. “no instantaneous causality between y and x.”
Linear Dependence ($F_{x,y}$)	$(F_{x,y}) = F_{x@y} + F_{y@x} + F_{x,y}$	$H_0: F_{x,y} = 0$, i.e. “no linear association between y and x.”

Table 3.
Rent-Seeking and Democracy in Uruguay 1925-1983, Summary Statistics

	Years	Democracy	Dictatorship	Import Substitution	Export Promotion
Total Actions	100.00 (42.5)	85.62 (34.3)	122.70 (45.1)	97.59 (42.3)	90.57 (44.2)
- Identified	47.0 (21.7)	43.5 (18.2)	52.6 (25.9)	49.2 (21.7)	40.8 (12.9)
- Non-Identified	53.0 (29.0)	42.1 (20.6)	70.1 (32.6)	48.4 (27.3)	49.8 (35.2)
By Economic Activity					
- Manufacturing	81.01 (37.4)	67.52 (29.5)	102.31 (39.4)	76.09 (35.1)	74.77 (46.5)
- Non-Manufacturing	18.99 (11.0)	18.11 (8.1)	20.39 (14.5)	21.50 (10.7)	15.79 (6.7)
By Trading Activity					
- Exports	40.58 (36.1)	24.57 (21.4)	65.86 (40.5)	29.98 (26.1)	46.26 (51.0)
- Imports	59.30 (27.3)	60.92 (18.2)	56.74 (37.9)	67.45 (23.5)	44.30 (16.8)
By Type of Law					
- Supreme Decree	67.26 (32.2)	73.66 (25.6)	57.16 (39.2)	76.26 (27.6)	54.65 (21.6)
- Supreme Resolution	32.51 (37.1)	11.92 (18.9)	65.01 (35.5)	21.05 (27.4)	35.85 (51.4)
By Type of Action					
- Non-Tariff Barriers	49.53 (21.5)	49.80 (18.0)	49.11 (26.8)	54.23 (20.9)	36.69 (8.7)
- Tariff Barriers	44.24 (31.4)	30.46 (21.5)	65.99 (32.6)	36.44 (25.3)	47.23 (44.2)

Numbers in parenthesis are p-values. Rent-seeking actions in Uruguay as percentage of gross domestic product, 1935-1983. Average total actions during the period equals 100 (average 1935-1983= 100). Standard deviations shown in parentheses.

Table 4. Rent-Seeking and Democracy in Uruguay, 1925-1983, Simple Correlation

Actions	Duration of Democracy	Institutional Democracy	Executive Recruitment	Executive Constraints	Political Competition
Total Actions	-0.6582 (0.000)	-0.4320 (0.004)	-0.5901 (0.000)	-0.5373 (0.000)	0.0148 (0.918)
- Identified	-0.4888 (0.001)	-0.2847 (0.052)	-0.5034 (0.001)	-0.4251 (0.005)	0.2202 (0.130)
- Non-Identified	-0.5976 (0.000)	-0.4192 (0.005)	-0.4871 (0.001)	-0.4684 (0.002)	-0.1431 (0.321)
By Economic Activity					
- Manufacturing	-0.6877 (0.000)	-0.4651 (0.002)	-0.5765 (0.000)	-0.5371 (0.000)	-0.0924 (0.521)
- Non-Manufacturing	-0.2041 (0.159)	-0.0871 (0.545)	-0.3201 (0.030)	-0.2497 (0.087)	0.3729 (0.012)
By Trading Activity					
- Exports	-0.6550 (0.000)	-0.5865 (0.000)	-0.5596 (0.000)	-0.5743 (0.000)	-0.4242 (0.005)
- Imports	-0.1566 (0.278)	0.1039 (0.471)	-0.1765 (0.222)	-0.0757 (0.599)	0.5822 (0.000)
By Type of Law					
- Supreme Decree	-0.0460 (0.749)	0.1945 (0.180)	-0.0232 (0.872)	0.0218 (0.879)	0.5246 (0.001)
- Supreme Resolution	-0.7107 (0.000)	-0.6635 (0.000)	-0.6532 (0.000)	-0.6330 (0.000)	-0.4431 (0.003)
By Type of Action					
- Non-Tariff Barriers	-0.3117 (0.034)	-0.0013 (0.993)	-0.2719 (0.063)	-0.1678 (0.246)	0.4968 (0.001)
- Tariff Barriers	-0.6515 (0.000)	-0.5627 (0.000)	-0.5693 (0.000)	-0.5700 (0.000)	-0.3475 (0.019)

Rent-seeking actions in Uruguay as percentage of gross domestic product, 1935-1983. Average total actions during the period equals 100 (average 1935-1983= 100). Standard deviations shown in parentheses.

**Table 5. Feedback Measures and Linear Dependence,
Democracy and Rent Seeking Actions in Uruguay, 1935-1983**

Causal Direction	Total Actions	Economic Activities			Trading Activities	
		Agriculture	Manufacturing	Services	Exports	Imports
Democracy (x) and Rent Seeking Actions (y)						
$x \text{ @ } y$	0.721 (0.051)	0.503 (0.079)	0.834 (0.061)	0.794 (0.003)	0.864 (0.021)	0.549 (0.052)
$y \text{ @ } x$	0.058 (0.982)	0.365 (0.179)	0.059 (0.175)	0.178 (0.616)	0.109 (0.186)	0.318 (0.094)
$x \times y$	0.221 (0.098)	0.132 (0.385)	0.106 (0.092)	0.028 (0.868)	0.027 (0.102)	0.133 (0.165)
x, y	1.000 (0.335)	1.000 (0.099)	1.000 (0.138)	1.000 (0.046)	1.000 (0.046)	1.000 (0.112)

The variable x represents the measure of democracy, whereas the variable y represents the measure of rent seeking, as measured by the number of rent-seeking actions published in legal documents in Uruguay from 1935 to 1983. All feedback measures are expressed as a percentage of the total correlation or linear dependence between democracy and rent seeking ($F_{x,y}$). Hence, the causality from *democracy* to *rent seeking* is represented by $x \text{ @ } y$. Similarly, the causality from *rent seeking* to *democracy* is represented by $y \text{ @ } x$. Finally, instantaneous causality is represented by $x \cdot y$ (see Table 1 and Table 2). The statistical significance of each feedback measure is shown in parentheses (p -values for χ^2 tests).

**Table 6. Feedback Measures and Linear Dependence,
Duration of Democracy and Rent-Seeking Actions in Uruguay, 1935-1983**

Causal Direction	Total Actions	Economic Activities			Trading Activities	
		Agriculture	Manufacturing	Services	Exports	Imports
Duration of Democracy (x) and Rent Seeking Actions (y)						
$x \text{ @ } y$	0.285 (0.461)	0.468 (0.054)	0.559 (0.056)	0.150 (0.482)	0.799 (0.003)	0.524 (0.044)
$y \text{ @ } x$	0.598 (0.082)	0.522 (0.276)	0.422 (0.071)	0.688 (0.061)	0.168 (0.574)	0.369 (0.075)
$x \text{ } xy$	0.117 (0.167)	0.009 (0.666)	0.018 (0.720)	0.162 (0.409)	0.033 (0.383)	0.107 (0.469)
x, y	1.000 (0.129)	1.000 (0.644)	1.000 (0.080)	1.000 (0.169)	1.000 (0.019)	1.000 (0.038)

The variable x represents the measure of democracy, whereas the variable y represents the measure of rent seeking, as measured by the number of rent-seeking actions published in legal documents in Uruguay from 1935 to 1983. All feedback measures are expressed as a percentage of the total correlation or linear dependence between democracy and rent seeking ($F_{x,y}$). Hence, the causality from *democracy* to *rent seeking* is represented by $x \text{ @ } y$. Similarly, the causality from *rent seeking* to *democracy* is represented by $y \text{ @ } x$. Finally, instantaneous causality is represented by $x \text{ } xy$ (see Table 1 and Table 2). The statistical significance of each feedback measure is shown in parentheses (p -values for χ^2 tests).