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Political Insulation, Technical Expertise and the Technocrat's Paradox

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Abstract: It is generally assumed that independent agencies reflect the Congress' willingness to deal with two different sources of risk that complement each other: political uncertainty regarding the policy implemented, and technical uncertainty regarding the outcome that would be achieved with that policy. This paper claims that such complementariness is true only when the Congress is expecting to capture the benefits of a sound technical decision. If this is not the case, for example when there is a large possibility of a political turnover in the near future, institutional design should follow a dynamic of entrenchment. Here politics and expertise substitute each other, thus reducing the optimal choice of agency independence. This paper illustrates these ideas by comparing the two waves of institutional reforms that occurred in Chile in the 1920's and the 1980's. The variance in the level of insulation achieved by each process responds to a key political difference: the first one was conducted through a democratic consensus that was meant to last several decades, whereas the second one was conducted during an authoritarian regime aware that its tenure in power was coming to an end.

Keywords: independent agencies, delegation, Administrative Law

1 Introduction

What is the goal pursued by an institutional designer when increasing the level of independence for government agencies? Insulating the agency from political pressure? Improving the agency's technical expertise? Most of the literature assumes that political insulation and technical expertise complement each other (e. g. Gersen, 2010). This is the traditional argument of technocracy when advocating in favor of agency independence.[1] Both goals would be simultaneously

1 See, e. g. OECD (2014) at 47, including as one of the organization's guiding principles that "establishing the regulator with a degree of independence (both from those it regulates and from

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served, for instance, when requiring a senate confirmation in the appointment of the head of the antitrust authority or when limiting the influence of the presidential cabinet in the budget of a banking regulator.[2] Building on the traditional approach of incomplete contracting (e. g. Hart et al., 1997), this paper describes what could be referred to as the "technocrat's paradox". That is, a setting under which political and technical factors work as substitutes, reducing the level of optimal independence. An institutional designer would care about fostering technical knowledge through agency independence, only if her future payoffs are affected by the consequences of the policies implemented today. On the contrary, when the institutional designer is facing a potential ousting from power, technical reasons are just an additional source of risk. As such, it should be traded against political uncertainty.

The literature on institutional design and insulation of regulatory agencies is rich in both formal modeling and substantive analysis. Its point of departure is the so-called ally principle, according to which the most important element in delegating policymaking authority is the ideological affinity between the principal and the agent. In our institutional context, the President's willingness to delegate decisional power would be proportional to the extent to which the regulatory agency shares her political beliefs (Moe, 1985). Considering that elections are generally won by those who better represent the voters' median position, democracy calls for an institutional design that enables presidential freedom to reward loyalty and punish divergence.[3] From the perspective of the ally principle, independence of regulatory agencies is something that carries prima facie anti-democratic concerns, something that requires a special justification (Majone, 2001). The literature provides three such justifications.

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government) can provide greater confidence and trust that regulatory decisions are made with integrity. A high level of integrity improves outcomes of the regulatory decisions".

2 In the US legal tradition, the mechanisms that enable classifying an agency as independent are: (i) leadership by a multi-member panel, (ii) political appointment with no more than majority coming from one party, (iii) specialized mandate on particular industries or cross-cutting problems, (iv) restrictions on the presidential removal power. See, Miller (1986). With respect to Europe, the requirements for classifying an agency as independent are similar, although the degree of budget control is also a relevant factor. For a comprehensive index of agency independence in the European Union, see Gilardi (2002).

3 There is an fundamental trade-off between responsiveness and insulation. Since the celebrated study by Ackerman and Hassler (1981), it is widely understood that administrative procedures designed to control bureaucratic drift also limit the agency's ability to exercise an independent judgment. Independence decreases presidential control for both good and bad. In the US academic debate, the voices calling for a return to unitary structures typically highlight the importance that accountability and responsiveness have in fostering government's efficiency. See, Kagan (2001).

The first one is well-known. According to what is commonly referred to as the stability thesis, distant political forces may agree on increasing agency insulation as a mechanism of mutual self-restraint (Spiller, 1995). This is the standard account of central bank and tax authority independence (e. g. Kydland and Prescott, 1977). Any government would like to further its own ideals, but the problem is that the next government will to do the same. Whenever the underlying ideals diverge substantially from one administration to the next one, any electoral turnover would be accompanied by large policy swings. Rival coalitions could prevent the corresponding policy losses and achieve a similar outcome when committing inter-temporally to a policy that somehow averages the two competing ideals.[4] In other words, restraining the President's ability to exert influence over regulatory agencies makes those institutions behave more moderately.

Contrasting with the traditional idea that agency insulation is the result of a democratic bargaining between political rivals, the restraint on policy swings sometimes arises from a dynamic of entrenchment. This body of the literature argues that institutional design simply reflects the efforts of the enacting coalition to preserve power when facing a risky future. Particularly, a coalition that fears a potential ousting from power may strategically implement insulation mechanisms (Moe, 1997). The idea is preventing any departure from the policies implemented in the present, by increasing the political transaction cost of future leaders.[5] Besides its ability to inform positive analyses (describing why independent agencies are created in practice), framing this dynamic entrenchment in normative terms is not an easy task. Lewis (2004) makes an interesting argument by pointing out that approving a new set of insulation mechanisms requires a particularly strong majority (e. g. control of both chambers, super-majority quorums). From this perspective, the normative justification is similar to the one applied to the democratic bargaining: independent agencies prevent policy drift, at least

4 As explained by Tirole (1994), such inter-temporal commitments would only improve social welfare under the assumption that a benevolent government is in place. Certainly, non-commitment to a future path of money supply or tax rates on capital typically induces suboptimal behavior by firms and consumers. Nevertheless, considering that democratic elections provide some check against inappropriate decisions, long-term commitment by a captured government could be more detrimental than the lack of any commitment.

5 The concept of political transaction costs comes from North (1990), and refers to the costs associated with monitoring and managing a principal-agent relationship within the government structure, such as the one between the President and the regulatory agency. A recurrent example is the reform of the Interstate Commerce Commission, the first independent agency in the US. Most of its insulation mechanisms were approved by an outgoing Democratic majority that had lost the 1888 elections, months before the new President and a Republican majority in Congress assumed office. See, e. g. Wood and Bothe (2004).

until the opposing coalition becomes strong enough to meet the quorum with which the corresponding reform was originally approved.

There is a third, and somewhat separated justification for agency independence. This other justification claims that increasing insulation improves the technical quality of the regulatory decisions. From a classic, Weberian perspective, any specialized agency increases its technical proficiency by focusing on a limited set of tasks and repeating them over time (e. g. Weber, 1956:382–394). Those arguments, however, say little about why a specialized agency should also be insulated from presidential intervention. After all, highly-specialized agencies have always existed within the government's central hierarchy.[6] What could be labeled as the precision thesis, requires distinguishing the reasons for delegating to experts from those justifying their insulation from presidential control.[7]

In the literature on agency independence, technical knowledge is conceived as a form of "policy technology", that is, something that is able to close the gap between the policy implemented and the outcome effectively achieved (McCubbins, 1985). Insulation is a way of creating bureaucratic visibility, a way of giving the agency credit for a policy success and making it responsible for a policy mistake. Considering that developing this policy technology takes time and effort, independence enables agencies to invest in regulatory knowledge (Stephenson, 2007). Similarly to what residual ownership accomplishes in the case of incomplete contracts, agency insulation introduces high-powered incentives into the delegation structure.[8] Of course, independence has costs: if the agent has specific knowledge related to the delegated task but the principal does not, their relationship is subject to moral hazard.[9] The asymmetries of information between

6 In terms of Wilson (1989), authority should always be placed at the lowest level of bureaucracy at which all essential elements of information are available. This approach has a long-standing tradition in the literature on economic regulation, connecting with Hayek (1945)'s ideas that decentralized decision-making is generally more efficient because it reduces transaction costs. See, Meier and Krause (2003) for a comprehensive review of the literature on this topic.

7 The rationale for agency specialization is generally related to a trade-off between expertise and integrity. As is highlighted by Williamson (1985), technical knowledge on a particular field of regulation is asset-specific, meaning that it is not easily redeployable (e. g. experts on banking regulation might not easily move to antitrust enforcement or environmental protection). Increasing specialization certainly improves technical proficiency, but only at the cost of making more expensive the coordination with other agencies, and thus affecting the harmony and integrity of the regulatory system. See, Freeman and Rossi (2012).

8 In other words, bureaucrats become responsible for the outcome of the policy implemented and not only for the amount of effort expended during the implementation. See, e. g. Lazear (2000).

9 Contrasting with specialization, the rationale for agency independence is related to a trade-off between expertise and responsiveness. Increasing insulation also improves technical

expert agencies and non-expert politicians undermine the ability of the latter to evaluate whether granting independence was a good idea.

The main contribution of this paper consists in debating the way in which this set of justifications interact in a simple model of delegation (e. g. Kiewiet and McCubbins, 1991). The firs step is realizing that whereas the stability and entrenchment theses are rival explanations about how an institutional designer deals with political uncertainty, the idea of precision touches a different topic. Rather than politics, the idea of precision is related to achieving technical expertise. The second step is actually looking at the interactions of these three justifications. The stability thesis assumes that the institutional designer will continue playing the delegation game forever. Under this scenario, investing in technical knowledge would increase the rewards arising from policy outcomes. Reducing the losses from political polarization and technical divergence are both perceived as benefits, which are jointly pushing for stronger levels of agency independence. In contrast, the entrenchment thesis assumes that the institutional designer will be ousted from power in the near future. Under this other scenario, technical divergence is a source of uncertainty, in that it particularly entails the risk that independent agencies might depart in the future from the policies implemented today. If policy outcomes are not relevant, the institutional designer would only consider that a fully-ideological agent should be more loyal than a technically-driven agent. Political and technical factors are now substitutes, and thus this interaction reduces the optimal level of independence.

Let me illustrate these ideas with an interesting experience arising from Chilean history.[10] The historical background will be further discussed in the last section of the paper. As a part of its admission to the Organization for Economic Cooperation and Development (OECD), Chile started an ambitious program of institutional reforms.[11] From an historical point of view, however, this is the

proficiency, but this time at the expense of making the agency less responsive to the policy consensus achieved in Congress. See, Gailmard (2002).

10 Chile is a recurring example on comparative studies regarding regulation of public utilities for both its archetypal presidential system, as well as its commitment to fostering economic development through institutional change. See, e. g. Spiller (1995).

11 The process began in 2008 with a thorough reform to the system for environmental assessment, while several other bills designed to restructure the agencies involved in consumer protection, antitrust, utilities regulation and the securities market. Additionally, the Chilean President's government has formed specific discussion groups regarding the institutional framework for regulating banks, health insurance companies, and pension funds. For an overview of most these President's reforms and their relationship with the admission of Chile to the OECD, see Morandé and Díaz (2010).

third time in about a century that Chile has redesigned the institutions involved in economic regulation. Similarly to the previous two waves of reforms on the 1920's and the 1980's, the current one is directed to insulating agencies from presidential intervention. Interestingly, the lessons arising from the two previous institutional precedents are very different. The reforms conducted at the beginning of the twentieth century can be explained under the traditional idea of technocracy: as the policy at issue becomes more technical, the stronger has to be the level of independence. The second wave of reforms occurred during the 1980's and supposedly had a similar technocratic inspiration. Nevertheless, the insulation mechanisms that were implemented in practice are significantly weaker. Strangely enough, the level of expertise seemed to have worked on these reforms the other way around, as a reason for undermining independence.

Chilean patterns on agency independence suggest that the paradoxical trend of the 1980's reforms might be explained in light of its closeness to the huge electoral turnover that occurred in 1988.[12] Chilean institutional designers in the late 1980's were probably aware that a shift in power was in the making, which in turn might have pushed them towards discounting any potential policy gain arising from agency independence. More generally, any government that is facing a potential ousting from power should care less about effective policy outcomes, for the simple reason that they might not be around by the time such outcomes become observable.

Again, it is generally accepted that technical and political needs complement each other. Such an assumption is correct when the institutional designer expects to capture the benefits of a sound technical decision. As is illustrated by Chilean institutional reforms in the 1920's, political polarization and technical divergence jointly pushed agency independence towards its highest degree in that legal system. However, sometimes politics and expertise work as substitutes for each other in the case of the entrenchment thesis. When the institutional designer foresees a political turnover down the road, as was the case with Chilean reforms in the 1980's, achieving technical precision is not really something that they would care about. The lower levels of independence achieved by the reforms of the Chicago

12 During 1988 Chile conducted a plebiscite deciding that dictator Augusto Pinochet would have to resign power. The international pressure for conducting this plebiscite, however, started several years before. Interestingly, most of 1980's reforms were made by the military regime during the last half of the decade, in a period that Silva (1996) calls "pragmatic neo-liberalism". This is by contrast with the period of "radical neo-liberalism" that dominates earlier in the decade. According to Chilean historians, pragmatism by the military regime comes largely from the awareness that the time-window for implementing the program of reforms was starting to close. See, e. g. Huneeus and Sagaris (2007).

Boy group of economists in Chile can be explained as a mechanism of trading political polarization against technical divergence.

The remainder of the paper proceeds as follows. The next section develops a spatial model of delegation where the degree of political polarization is directly proportional to agency independence. The third section expands the model by considering technical disagreement as a source of divergence between the policy implemented and the outcome achieved. This is the central part of the paper, showing that politics and expertise work as complements only when the institutional designer is concerned for achieving a particular result in the future. If the Congress only cares for implementing policies, regardless of the outcome, political polarization and technical divergence would substitute each other. The fourth section illustrates these ideas with a stylized review of the two waves of institutional reforms in Chile. The last section offers some concluding remarks.

2 A spatial model of delegation

Following Stephenson (2008), consider a simple policymaking game with three players: a congress (C), a president (P) and a bureaucracy (B). There are two periods that can be thought of as the "institutional design" stage and the "policymaking" stage. The sequence unfolds using the usual structure of a delegation game in which the Congress is acting as the principal.[13] The President and a Bureaucracy are both agents, with the mechanisms of institutional design being a choice variable used by the Congress as a way of regulating their relationship.[14]

We begin the analysis with the sequence of play at the institutional design stage. A Bureaucracy is created to make a policy decision $x \in \mathbb{R}$. All the relevant political constituencies have an initial ideal point y_i regarding this particular issue. The political constitution defines through democratic means the proper extension of the index i. Then, the Congress makes its policy choice c by selecting

13 The game is built upon a divergence of goals between the principal and the agent, which will be later characterized as a problem of incomplete contracting. From this perspective the model follows a principal-agent approach, one of the traditional approaches to the optimal design of bureaucracy (Meier and Krause, 2003).

14 A delegation game generally consists of a principal that enacts the law and an agent that implements a policy within the legal framework designed by the principal, both acting under some degree of goal divergence. Delegation games, however, were originally thought of as a choice of who would be filling the incompleteness in the "agency contract": non-expert courts or expert agencies. See, Fiorina (1986).

the median position among the ideal points of the various constituencies.[15] In order to simplify the analysis it is assumed that $c = 0$. The Bureaucracy also has an initial ideal position denoted by y_b, which can be thought of as the "initial bureaucratic bias". During the institutional design stage, the Congress chooses a level of bureaucratic insulation $\beta \in [0, 1]$. The variable β is meant to represent any combination of budget committees, appointment procedures, veto powers and any other mechanism directed to control the substantive discretion of the Bureaucracy.[16]

Let us turn now to the policymaking stage. First, the President sets her position on the policy at issue. The President is initially faithful to the Congress, but is also aware of any potential shifts as a consequence of the actual variance in the constituencies' ideal points, such that $p = c + \alpha$. The parameter α is drawn from a known distribution with mean 0 and variance $\sigma^2 = \sum_{i=1}^{n}(y_i - c)^2$. The variance on the stakeholders' ideal points can be thought of as a measure of the underlying polarization regarding a particular policy. In turn, a high degree of polarization implies that the policy choices are less stable and there is a higher risk of a political shift in the future (e. g. in terms of the Euclidean distance from the political consensus).[17]

The Bureaucracy sets her position next. Absent presidential intervention, the Bureaucracy would sustain her initial bias such that $b = y_b$. The President, however, can take a costly action directed to influence the Bureaucracy and push it towards a different choice of b. The cost of influencing the Bureaucracy is assumed to be $\beta(1-\beta)^{-1}(b-y_b)^2$. This functional form for β is fairly common in the literature and has a number of useful properties. Particularly as the insulating mechanisms become weaker and β approaches to zero, influencing the Bureaucracy's choice is going to be increasingly cheaper until it becomes completely costless. On the contrary, as the insulating mechanisms become stronger and β

15 Unlike other spatial models, there are no error terms in the policy choice of the Congress. The model is not directed to capture any potential agency problem between voters and their representatives, although this feature could be easily implemented by changing the functional form of c. See, Fiorina and Noll (1978).

16 The idea of substantive discretion is developed by McCubbins (1985), considering that the agency's freedom to act on a particular subject is determined by the jurisdictional scope and procedural requirements imposed by Congress. Substantive discretion is positively related to the broadness of the jurisdictional scope, and negatively related to the intensity of the procedural requirements.

17 It is worth stressing that the main driver in the principal's decision-making process is not the aversion to risky outcomes, but simply an aversion to bad outcomes. As developed in Bendor and Meirowitz (2004), the quasi-concavity inherent in Euclidean preferences by itself creates an informational rationale for delegation, regardless of the fact that the quadratic policy losses generally used in spatial models also meet concavity requirements.

approaches to one, influencing the Bureaucracy's choice becomes progressively costly until reaching infinity.[18]

After the President exerts her influence, the Bureaucracy implements the policy x and all the players receive their utility payoffs. Each player suffers a quadratic loss depending on the distance between the final policy implemented and the player's policy choice.[19] That is, for the k-th player the policy loss is $-(x-k)^2$. Note also that the President is able to exert influence on the Bureaucracy's policy choice, but is not able to directly implement the policy by herself. The idea is to represent the way in which the executive power traditionally operates with respect to independent agencies: if the stakes are high enough a President may threaten with budget restrictions, offer a career advancement, or even change the head of the Bureaucracy for someone closer to her political ideas. Nevertheless, a President rarely has authority to re-assume a decisional power that has been delegated by law.

As usual, the game is solved using backward induction. The Bureaucracy moves last and maximizes its utility by implementing the policy closest to its political choice, such that $\overset{*}{x} = b$. Then, the President decides how much influence to exert on the Bureaucracy, maximizing her choice of b according to the condition:

$$EU_P = -(b-p)^2 - \frac{\beta}{1-\beta}(y_b - b)^2 \tag{1}$$

The first term on the right-hand side of Equation (1) captures the expected payoff from exerting influence using the fact that in equilibrium $\overset{*}{x} = b$. The second term captures the cost of exerting influence measured in the utility loss arising from the effort involved in moving the Bureaucracy's choice from y_b to b. Hence, the optimal choice $\overset{*}{b}$ comes from equating the marginal costs and benefits of exerting influence, and is given by:

$$\overset{*}{b} = (1-\beta)p + \beta y_b = (1-\beta)(c+\alpha) + \beta y_b \tag{2}$$

18 The formalization of β is thus similar to the functional form of the probability of convincing a court by producing evidence. This, in turn, enables the use of solution concepts that should be familiar to readers coming from a Law & Economics background. See, e. g. Talley (2012).

19 This quadratic loss function has two important implications: (i) players will prefer outcomes that are closer to their ideal point than those further away; and, (ii) they would also dislike uncertainty over policy outcomes. At the margin, a player would be willing to trade policy losses in exchange for a reduction in the potential impact of random shocks. See, Epstein and O'Halloran (1999).

Finally, the Congress chooses the level of insulation that minimizes the difference between the policy that would be implemented by the Bureaucracy and the Congress' policy choice. Unlike the strategic decisions made by the other players, the Congress uses legislation for making its choices regarding budget committees, appointment procedures, veto powers and other insulation mechanisms reflected in β. This implies that such choices are made in the institutional design stage, before observing p or b and without the possibility of revisiting its decisions. Therefore, the process of selecting β involves maximizing[20]:

$$EU_C = (1-\beta)^2\sigma^2 + \beta^2 y_b^2 \tag{3}$$

The optimal choice of bureaucratic insulation comes from setting $\partial EU_c/\partial\beta = 0$, and solving for β:

$$\overset{*}{\beta} = \frac{\sigma^2}{\sigma^2 + y_b^2} \tag{4}$$

The interpretation of Equation (4) is straightforward. An increase in the degree of polarization leads to proportional increases in the optimal level of insulation. The result is consistent with the stability thesis and the idea that bureaucratic insulation is a means for avoiding political drift. When the level of polarization regarding the policy at issue is relatively large, bureaucratic insulation allows minimization of the impact of random political shocks.[21] In turn, the presence of y_b^2 in the denominator is a reminder of the relevance that the ally principle has in all forms of spatial models. As the Bureaucracy's initial ideal point is located farther away from the policy choice of the Congress, the willingness for granting legal insulation decreases. In other words, insulation is also a way of rewarding political affinity.

20 Note that considering expectations, $EU_C = E\big[-((1-\beta)(c+\alpha) + \beta y_b - c)^2\big]$. However, we can use the facts that $c = 0$, $E[\alpha] = 0$ and $\sigma^2 = E[\alpha^2] - E[\alpha]^2$ to simplify this condition. For further explanation on the subject, see Stephenson (2008):71–84 and 98–100.

21 Notice also that the decision of the Congress regarding the optimal insulation level is mainly driven by σ^2, which enables a wide range of functional forms for c. See, e. g. Issacharoff and Miller (2010).

3 Technical knowledge and incomplete contracting

This section introduces the role of technical knowledge in the regulatory process. Similarly as with politicians, all the technical constituencies have an ideal initial point y_j. The jurisdictional scope of the agency defines the proper extension of j, the index selecting which technical opinions are relevant for the policy at issue.[22] Technical knowledge is considered as a sort of "policy technology" using the common additive form, outcome = policy + random shock (Huber and Shipan, 2006). Formally, the variable $z = x + \epsilon$ denotes an outcome that depends partially on the policy implemented, and partially on a noisy measure of uncertainty.[23] As before, the parameter ϵ is drawn from a known distribution with mean 0 and variance $\rho^2 = \sum_{j=1}^{n}(y_j - c)^2$. The parameter ρ^2 can be thought of as the underlying divergence of technical knowledge regarding a particular policy.[24] Because the median position represented by c is assumed to be zero, divergence on technical knowledge is measured with respect to the policy consensus. Hence, as the divergence increases, the separation that random shocks may create between policy x and outcome z also becomes larger.

The traditional approach of the literature consists in assuming that the Bureaucracy has superior technical information, such that the choice on the optimal set of insulation mechanisms reflects a trade-off between uncertainty regarding policy outcome and agency behavior (Aghion and Tirole, 1997). This model follows a different path. It considers that players would only care about technical divergence when their payoffs depend on the outcome and not only on the policy implemented. For instance, the expression $-(z - c)^2$ reflects that Congress' policy

22 Generally, a broader jurisdictional scope is associated with a larger degree of independence for two different reasons. On the one hand, a broader scope makes the monitoring by Congress harder (McCubbins, 1985). On the other hand, as the number of industries under an agency's supervision increases, their interests become more diverse and a potential capture should be harder (Macey, 1992).

23 Notice that α and ϵ, our two measure of uncertainty, are assumed to be independent. The idea is to capture a stylized story where technocrats are unable to shift the political consensus, but rather describe the chances with which the policy at issue may reach its desired outcome. See, Bawn (1995).

24 Notice that technical divergence is here an exogenous parameter. As was explained above, the idea is that all the players have equal access to technical knowledge. Other models allow that the choice of optimal insulation affects the degree of technical divergence, which, in turn, enables a focus on the particular incentives of the agency for developing regulatory knowledge. See Stephenson (2007).

losses on that issue are dependent on effective outcomes. Regarding that same issue, the policy losses of the President and the Bureaucracy could either be driven by the policy implemented or its effective outcome. Hence, the goal is analyzing whether the differences in incentives have an influence over the Congress' choice regarding optimal insulation.

In other words, x can be regarded as the agent's input (e. g. the Bureaucracy's effort when implementing the policy, the President's effort when exercising influence). In contrast, z can be though of as the output achieved. Whenever the policy loss function is driven by effort, it is equivalent to a low-powered or input-based payoff scheme. For example, if Congress is concerned about policy results, an input-based payoff scheme constitutes a form of incomplete contract. That is, one that fails to provide high-powered incentives and is not properly defining the interests of the principal.[25]

Let us analyze first a scenario in which Congress and Bureaucracy's payoffs are driven by the effective outcome z whereas the policy losses of the President would continue to be attached to the policy implemented x. Imagine, for instance, that the presidential period is relatively short, but the policy implemented would only yield its results several years from now. The Congress and the Bureaucracy will still be accountable when the policy outcome becomes observable, whereas the President will not. Contrasting with its behavior in the previous section, under this scenario the Bureaucracy maximizes $-(z-b)^2$ and chooses $\overset{*}{x} = b - \epsilon$. Because the Bureaucracy is now subject to high-powered incentives, the decision on the policy implemented considers both political and technical uncertainty.

Although the President only cares for the policy implemented x, the change in the Bureaucracy's payoff also affects the decision on how much influence would be optimal to exert, such that:

$$EU_P = -(b - \epsilon - \alpha)^2 - \frac{\beta}{1-\beta}(y_b - b)^2 \tag{5}$$

The Bureaucracy's choice in equilibrium, after the presidential influence is exerted, would be given by $(1-\beta)(\epsilon+\alpha)+\beta y_b$. Consequently, the Congress chooses the optimal level of insulation at the institutional design stage, maximizing $EU_C = (1-\beta)^2(\rho^2+\sigma^2)+\beta^2 y_b^2$.[26] Optimal bureaucratic insulation is therefore represented by the expression:

25 As is highlighted by Rose-Ackerman (1986), one of the recurring problems in Administrative Law is that the connection between bureaucratic effort and policy outcome is hard to observe. This, in turn, makes it harder to reward bureaucrats with an ouput-based structure.

26 Note that $EU_C = E\left[-(z-c)^2\right] = E\left[-(\overset{*}{x}+\epsilon)^2\right] = E\left[-(\overset{*}{b}-\epsilon+\epsilon)^2\right]$. Since the Congress and the Bureaucracy have similar incentive schemes, the latter two terms cancel out, simplifying the condition.

$$\underset{C,B}{\overset{*}{\beta}} = \frac{\rho^2 + \sigma^2}{\rho^2 + \sigma^2 + y_b^2} \tag{6}$$

Notice that technical divergence and political polarization complement each other. An increase in either one leads to increases in the level of insulation granted by the Congress. The result is again consistent with the environment underlying the stability thesis, where an institutional designer thinking in the long term receives the rewards of improving the effectiveness of a policy. Similarly to before, the presence of y_b^2 in the denominator reminds us that Bureaucracy's initial bias is inversely proportional to the level of optimal insulation.

Let us compare Equation (6) with the effect of technical knowledge when the incomplete contracting works the other way around. The Congress and the President are now the ones working under input-based incentives, whereas the Bureaucracy continues to care about effective outcome. This could be the case if once again the policy outcomes would only be observable in the future. However, consider that a major political turnover is underway such that elected officials will likely be removed, while career officials should remain at their positions. If so, the Bureaucracy would continue implementing $\overset{*}{x} = b - \epsilon$ and the President exerting optimal influence in order to achieve an equilibrium b that yields $(1-\beta)(\epsilon+\alpha)+\beta y_b$.

Recall, however, that Congress does not care about technical uncertainty. Hence, the expectation EU_C requires maximizing $(1-\beta)^2\sigma^2) + \beta^2(\rho^2 + y_b^2)$, giving us an optimal level of insulation represented by[27]:

$$\underset{B}{\overset{*}{\beta}} = \frac{\sigma^2}{\rho^2 + \sigma^2 + y_b^2} \tag{7}$$

Technical divergence and political polarization are here presented as a trade-off. Interestingly, such a trade-off moves in the opposite direction than conventional wisdom would have predicted. Political polarization increases the level of optimal insulation, whereas technical divergence calls for greater presidential influence. A potential interpretation is that a strategic Congress has to decide between two potential sources of risk: the President may depart from c in light of random

27 A similar result could be achieved if the Congress and the President are concerned with effective outcomes, whereas the Bureaucracy is working under low-powered incentives. If so, the Bureaucracy disregards technical uncertainty and implements $\overset{*}{x} = b$. A President driven by effective policy outcomes, balances the cost and benefits of exerting influence $EU_P = -(z-p)^2 \ldots = -(b+\epsilon-\alpha)^2 - \beta(1-\beta)^{-1}(b-y_b)^2$. Bureaucracy's choice in equilibrium changes to $(\beta-1)(\epsilon-\alpha)+\beta y_b$, EU_C now requires maximizing $(\beta-1)^2(\rho^2-\sigma^2)+\beta^2 y_b^2$, and the optimal level of insulation becomes:

$$\underset{C,P}{\overset{*}{\beta}} = \frac{\sigma^2}{\rho^2 + \sigma^2 + y_b^2}$$

Which is the same expression as Equation (7)

political shocks, whereas the Bureaucracy would do the same due to random technical shocks. Under these conditions, the Congress may strategically use the institutional design of the agency in order to side with the player that represents the "lesser of two evils".

4 Illustrating the technocrat's paradox

This section illustrates how the idea of incomplete contracting can change our understanding about agency insulation. The examples are a stylized reconstruction of the two waves of regulatory reform that occurred in Chile during the twentieth century. The first one took place around 1925 and included some of the traditional mechanisms for controlling monetary policy.[28] The second one occurred during the 1980's and was a far-reaching conservative reform, extending over almost the entire scope of the Executive Power.[29] Both processes share several interesting features, such as a reliance on international expertise and its technocratic inspiration (e. g. Huneeus and Sagaris, 2007). The earliest wave was part of an international effort headed by Edwin Kemmerer, whereas the latest one was famously conceived by Milton Friedman and a group of his alumni at the Chicago School of Economics.

Interestingly, however, each process was implemented in a very different political context. Although political turmoil was significant during the entire first half of Chile's twentieth century, Kemmererian reforms were largely the result of a democratic consensus (Corbo and Hernández, 2005). On the contrary, the Chicago Boys' agenda was implemented by the military regime of Augusto Pinochet during the last part his administration, that is, at a moment in which a large political turnover was something foreseeable in the near future (Silva, 1996). Under the analytical framework developed above, the Kemmererian reforms represent an agreement between distant political forces, whereas the reforms of the Chicago Boys followed an entrenchment rationality. Accordingly, the 1920's reformers may have had good reasons for caring about effective outcomes –they were

28 As in many other Latin American countries, Chilean institutional reforms in the 1920's were directed to achieve strong local currencies and balanced public budgets. From an institutional perspective, those goals required increasing the independence of central banks, tax authorities and the public comptroller. See, Drake (1989).

29 The so-called "silent revolution" included drastic changes on seven key areas: labor policy, social security, education, health, administrative decentralization, agriculture and justice. The reforming program included separating the agencies involved in any of these seven areas from the President's central hierarchy. See, Foxley (1983).

expecting to be in power at the time the policies implemented were achieving results. The reforms of the Chicago Boys, in contrast, may have been conducted under the feeling that the regime was coming to an end. If so, this difference could help us to explain the actual variance on Chilean trends of institutional design.

Consider four specific regulatory institutions and three insulation mechanisms. A summary of the interactions between them is included in Table 1. The first pair of institutions are the Central Bank and the General Comptroller's Office, both created around 1925 and part of the traditional package of Kemmererian reforms. Political polarization should be high in these two cases. The coalition supporting the incumbent government would always prefer expanding public expenditure –either by increasing the government's deficit or through the issuance of more currency, whereas the opposing coalition would always prefer saving the resources for whenever they gain access to power.[30] Nevertheless, notice that technocratic divergence in Latin America was relatively larger on the topic of money supply than regarding policies of budget control (Glaser, 2003) From an institutional design perspective, the Central Bank and the Comptroller's

Table 1: Summary of insulation mechanisms. Multi-member refers to whether the agency's leadership is exercised by a multi-member panel, Appointment refers to whether the appointment of the agency's leadership requires Senate confirmation, and Budget control refers to whether the agency has formal powers to control its own budget.

Institution	Multi-member	Appointment	Budget control
Central Bank	Yes	Yes	Yes
Comptroller's Office	No	Yes	Yes
Banking Superintendency	No	No	Yes
Pension Funds Superintendency	No	No	No

Office represent the strongest degree of insulation that the Chilean legal system may offer (Cordero, 2012). In both cases independence from the Executive Power is granted at a constitutional level. In turn, appointment to their highest ranks requires confirmation by the Senate and there are several limitations in place that prevent the President from controlling the agency by strategically changing its budget. Nevertheless, the Central Bank is relatively more independent than the

30 Notice how the implicit rationale follows the stability thesis. There is a mutual gain should the opposing parties agree on insulating any of these agencies: The consensus policy should reflect the same position as if coalitions were uncertain about the results of the elections. See, e. g. Ferrada (1998).

General Comptroller's Office because of the multi-member board that is heading the former institution. In our model, such a difference may be explained in light of two elements. First, the democratic consensus behind Kemmererian reforms indicates that the Congress cared about the effectiveness of the policies implemented. Second, because technical divergence is relatively larger regarding monetary policy, the Central Bank would justify an additional layer of insulation.

The other pair of institutions are ones entrusted with the prudential regulation of banks and the monitoring of pension funds. Both were part of the institutional design preferred by the Chicago boys, known as *Superintendecias*.[31] Although Chilean scholars used to talk about the *Superintendecias* as a technical and independent agency, recent studies show that they do not have most of the insulation mechanisms that define an independent regulatory agency (IRA) in most jurisdictions (García and Cordero, 2012). A separation from the central hierarchy of the Executive Power is granted by law, but the head of the institution is always a single individual whose appointment and removal is discretionary decided by the President.[32] In relative terms, however, the banking authority has a higher degree of independence because its budget is financed by the regulated firms.

Political polarization should also be high in these other two cases. Both agencies were included in legislative decrees passed during the last part of the Pinochet regime, following a logic of entrenchment where the right-wing parties were pushing the policies as far as they could before surrendering power. In contrast with the previous case, however, technocratic divergence should be higher for the least independent agency.[33] The prudential regulation of banks is largely

31 There were at least two *Superintendecias* whose origins can be traced to the 1920's reforms. In its original design, however, they were located within the President's cabinet and lacked any form of independence. It was during the 1980's reform that the model was expanded as a complement to the privatization of several industries (e. g. electricity, health insurance, pension funds), both creating several new *Superintendencias* and implementing insulation mechanisms. See, García (2009).

32 The appointment of a *Superintendente* generally requires consultation with a technical agency for public hiring (Council for High Public Direction, or ADP according with the Spanish acronym). However, several agencies have particular exemptions, as it is widely believed that the requirement of consultation does not provide much insulation from presidential influence. See, García and Verdugo (2010).

33 A similar example is provided by the telecom industry. There is a relatively independent commission entrusted with controlling the substantive contents of television (National Commission of Television, or CNTV according with the Spanish acronym), whereas the agency in charge of defining technical standards and fixing tariffs for natural monopolies is located within the hierarchy of the Ministry of Transportation (Undersecretary of Telecommunications, or SUBTEL according with the Spanish acronym).

a pacific field of technical debate, with most countries converging on a specific set of international standards (e. g. Dewatripont and Tirole, 1994). On the contrary, Pinochet's regime was the first in implementing a fully-privatized pension system, despite the existence of substantial divergence on the technical aspects of the reform (Edwards, 1998). From an incomplete contracting perspective, the paradoxical lack of insulation of the Pension Funds Superintendency could be explained because the dictatorship was foreseeing a political turnover, and therefore cared less about effective outcomes than the Kemmererian reforms.

Let us choose some arbitrary values in order to illustrate the ideas above. The exercise summarized in Table 2 follows the classic approach of Silva (1991), dividing the spectrum of relevant decision-makers in Chile between politics and technocrats. Regarding the former, consider a bipartisan system with the index $i = \{l, r\}$ representing the initial ideal point of left-wing and right-wing politicians, respectively. We also make the common assumption that both left-wing and right-wing ideal points are symmetrically divergent from $c = 0$ (e. g. Stephenson, 2007). This enables us to simplify the variance of ϵ, using the expression $\rho^2 = \sum_{i=1}^{n} (y_i - c)^2 = 2y_j^2$ as the underlying political polarization. Similarly, assume a symmetric partition in the technical knowledge with $j = \{s, m\}$ indexing the initial ideal point of structuralist and monetarist technocrats, respectively. As with political polarization, the variance of α now becomes $\sigma^2 = \sum_{j=1}^{n} (y_j - c)^2 = 2y_j^2$, that is, the underlying divergence on the technical knowledge that surrounds a particular policy. Assume that political polarization is equally high in our four cases,

Table 2: Summary of numerical examples. The values presented here are meant to illustrate the way in which symmetrical changes in technical divergence affect the optimal choice of agency independence. Bureaucracy's initial bias and political polarization are purposely held constant, using a similar scale to technical divergence.

Institution	y_b	y_l	y_r	y_s	y_m	σ^2	ρ^2	$\overset{*}{\beta}$
Central Bank	5	10	−10	10	−10	200	200	94 %
Comptroller's Office	5	10	−10	5	−5	200	50	91 %
Banking Superintendency	5	10	−10	5	−5	200	50	73 %
Pension Funds Superintendency	5	10	−10	10	−10	200	200	47 %

and that the bureaucratic bias is left-leaning but somewhat moderate. That is, in Euclidean coordinates, $y_l = 10$, $y_r = -10$ and $y_b = 5$. In contrast, technical divergence is high regarding monetary policy and the pension fund system, such that $y_s = 10$ and $y_m = -10$. Nevertheless, technocrats' ideal positions are half as distant regarding budget control and banking regulation. Under these conditions, $\sigma^2 = 200$ while ρ^2 changes between 50 and 200. The resulting optimal insulation thus

follows the same trajectory described in the formal measures of independence of Table 1. The Central Bank would be 97 % independent, and the Comptroller's Office 94 %. On the contrary, and despite being regarded as some of the most influential technocrats in Chilean history, the agencies designed by the Chicago Boys are substantially less independent, ranging from 73 % to 47 %. Notice that in both extremes are the two agencies where technocrats should dissent the most. This, in turn, illustrates how incomplete contracting can change the functional nature of technical divergence: technical knowledge complements political polarization only when the institutional designer is concerned with effective outcomes. When rulers do not care about effective outcomes, the risks arising from a potential drift coming from technocrats and politicians substitute each other.

5 Concluding remarks

The article developed a model to investigate the interaction of technical divergence and political polarization. Although stylized and largely incomplete, the analysis is driven by a simple intuition. Political beliefs and ideology are what defines a society's inclination regarding a particular policy. In contrast, technical knowledge is a form of "policy technology", something that relates the policy implemented with its potential outcomes. Both factors are independent, in the sense that technical knowledge is not affected by political beliefs, or vice-versa. The institutional designer, either the Congress or other representative institution, generally cares about societal inclinations. Whether they also care for technical knowledge is something that depends on her expectations about the future.

In our example, the differences between the two waves of institutional reform in Chile can be reasonably explained in light of an attitudinal change regarding the future. Kemmererian reforms are the product of democratic consensus and were designed to last several decades. In contrast, the Chicago Boys implemented their reforms knowing that a large political turnover was in the making. Not surprisingly, they placed significantly weaker insulation mechanisms on the regulatory agencies created during their tenure. The level of independence achieved in practice suggests that policy outcome was not its main concern. In other words, under an environment that reflected the stability thesis, Kemmererian reforms evidence a complementariness between technical divergence and political polarization. In contrast, under an environment that reflected the entrenchment thesis, the Chicago Boys treated both factors as substitutes in their decisions about optimal agency insulation.

More generally, technical knowledge is both a risk and an opportunity. It is an independent source of uncertainty, but also a means for improving policy

precision. Agency independence is overall beneficial in the context behind the stability thesis. Building autonomy around a democratic consensus reduces the losses from polarization and policy swing, but also rewards agencies that invest in knowledge and deal with technical divergence. On the contrary, in the context of entrenchment the interaction of politicians and technocrats should be different. Entrenched rulers do not care about policy outcomes and would only perceive technocrats as a source of risk. Under this scenario, independence becomes appealing for an institutional designer only if the lack of technical divergence enables a risk-less transfer of power to political allies.

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