# The Formal Independence of Regulators: A Comparison of 17 Countries and 7 Sectors

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#### Abstract

This article seeks to explain the pattern of delegation to independent regulatory agencies in Western Europe. Two types of arguments are advanced to explain variations in the formal independence of regulators. Firstly, the need for governments to increase their credible commitment capacity may lead them to delegate regulation to an agency that is partly beyond their direct control. Secondly, delegation may be a response to the political uncertainty problem, which arises when governments are afraid of being replaced by another coalition with different preferences, which could decide to change existing policy choices. In addition, veto players may constitute a functional equivalent of delegation, since they influence policy stability and therefore tend to mitigate both the credibility and the political uncertainty problems. These arguments are consistent with the results of the empirical analysis of the formal independence of regulators in seventeen countries and seven sectors.

**Keywords:** Delegation, Regulation, Regulatory Policy, Independent Regulatory Agencies

#### Introduction\*

Over the past fifteen years, independent regulatory agencies (IRAs) have become a common institutional form in regulatory policies, and constitute one of the main

<sup>\*</sup> A previous draft of this article was presented at the ECPR Joint Sessions of Workshops, Edinburgh, 29 March – 2 April 2003, and at the conference "Economics and Politics", Lugano, 22-25 May 2003. I thank the participants as well as Simon Hug and an anonymous reviewer for useful comments. Any errors are mine.

characteristics of the "regulatory state" (Majone 1997a). IRAs are non-majoritarian institutions, namely "governmental entities that (a) possess and exercise some grant of specialised public authority, separate from that of other institutions, but (b) are neither directly elected by the people, nor directly managed by elected officials" (Thatcher and Stone Sweet 2002: 2). They have been established in all West European countries, and the OECD recently described them as "one of the most widespread institutions of modern regulatory governance" (OECD 2002: 91). Why IRAs have spread so remarkably is an interesting question, which however has been explored elsewhere. In particular, Gilardi (2005a) has found that individual IRA creations have not been independent, which implies that their spread has been at least in part due to a diffusion process.

In addition to their diffusion, another important point concerns the different amounts of formal independence that governments have granted to IRAs. As will be explained below, it can be considered that formal independence depends on the status of the head of the regulator and of its management board, on the relationship with government and parliament, on financial autonomy, and on the extent of regulatory powers. Figure 1 shows that considerable variation exists, both across sectors and across countries. For example, regulators are on average about twice as independent in utilities than in social regulation<sup>1</sup>; crossnationally, regulators are on average much less independent in Germany and Switzerland than in the United Kingdom, Ireland, France and Sweden.

The main goal of this article is to investigate these differences and explain patterns of delegation to IRAs in Western Europe. Two main arguments are advanced. The first is that governments may delegate so as to improve the credibility of their regulatory commitments. Credibility is a valuable asset in regulatory policy especially when one of the principal goals is to attract private investment. On the other hand, delegation may be an attempt to cope with the political uncertainty problem, namely the fact that whenever there is a change in government, the possibility arises for policies being changed by the new incumbent. A government fearing replacement may thus attempt to improve the durability of its policy choices by insulating policy from politics through delegation. In both cases, institutions are likely to matter. Veto players, in particular, may work as a functional equivalent of delegation. More veto players lead to greater policy stability, which mitigates both the political uncertainty and the credibility problems.

<sup>&</sup>lt;sup>1</sup>A distinction is usually drawn between economic and social regulation. Regulation is termed "economic" when it deals with the price, entry, exit and service of an industry, while it is termed "social" when it concerns non-economic issues such as health and safety (Meier 1985: 3).

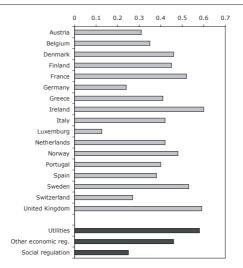


Figure 1: Formal independence of regulators: average values for countries and sectors

Utilities: telecommunications and electricity; other economic regulation: financial markets and competition; social regulation: pharmaceuticals, food safety and environment. The independence index ranges from 0 (no independence) to 1 (full independence). See text for details. Source: Gilardi (2004).

The opposite argument can also be made, however. It can be argued that delegation itself is not credible if it can be easily withdrawn; using delegation as a response to political uncertainty may be useless if the new government can revert delegation easily and thus regain control over policy. These two perspectives thus lead to opposite expectations, but agree on the fact that veto players are an important institutional variable in delegation processes.

These arguments are examined empirically in a quantitative analysis of 106 regulators in seventeen countries (EU member states before enlargement plus Switzerland and Norway) and seven regulatory domains (telecommunications, electricity, financial markets, competition, pharmaceuticals, food safety, and environment). The dependent variable is the formal independence of regulators from elected politicians, which is summarized in an independence index (see Gilardi 2002). The findings are in line with the theoretical expectations. Regulators are more independent in economic regulation, and in particular in utilities regulation, than in social regulation. Furthermore, IRAs tend to be more independent in countries where there is frequent turnover between governments with different preferences. The relationship is non-linear, a fact that lends further support to the hypothesis, as is discussed below. Finally, IRAs

tend to be less independent in countries characterized by many veto players, which indicates that institutional structures making change more difficult are a functional equivalent of delegation and not a prerequisite.

The next section presents the theoretical arguments and hypotheses. The following two sections discuss data and methods and present the result of the quantitative analysis. Conclusions sum up the main arguments and findings and discuss the research perspectives opened up by this article.

## Delegation to IRAs: credibility, political uncertainty, and veto players

Delegating powers to an independent agency is, in principal-agent terms, a paradox. In effect, this type of delegation violates one of the main conclusions of principal-agent models (see e.g. Miller 2005), namely that delegation must be accompanied by controls, lest moral hazard problems will be exacerbated. Of course, granting formal independence by no means implies that all controls are abandoned, but we can safely assume that, all else equal, more formal independence leads to a higher risk of moral hazard. An implication is that the standard rationale of delegation, namely benefiting from the expertise of the agent, is not likely to be the primary motivation of delegation to IRAs. In this case, what needs to be explained is not why regulatory competencies are delegated to an agent, but why they are delegated to an independent agent. Two arguments permit to explain why delegation to IRAs is characterized by the fact that the agent is given unusually high independence.<sup>2</sup> The first argument highlights the need for policy-makers to make credible commitments (for general statements of this argument, see Majone 1997a, 1997b, 2001), while the second stresses the political uncertainty problem.

The credibility problem follows from the fact that preferences may not be consistent over time, which can have adverse consequences on policy-making. In Kydland and Prescott's (1977) classic example, a government does not want houses to be built on a flood plain and makes a commitment not to build protections in case houses are built. If some actors do not believe this commitment and think that if they build houses then the government will change its mind to protect them, they may actually build houses. At this point, the government will be inclined to build protections, and the final outcome will be that both houses and protections are built. The government's preferences here are time-inconsistent: at time t, it does not want to build protections; at time t+1, it prefers to build them. The anticipation of relevant actors is the cause of time-inconsistency in

<sup>&</sup>lt;sup>2</sup> That is, unusually with respect to "normal" bureaucratic structures.

this case.<sup>3</sup> If they believed the government's commitment, they would not build houses and the government would not have to build protections at time t+1.

In regulatory policies, time-inconsistent preferences are a problem especially if one of the main goals is attracting private investment. At time *t*, a government may announce investor-friendly regulation. Once the investments have been made, however, the temptation may arise to revert the original decision and, for example, raise taxes. From the investors' perspective, this is especially annoying if the investments they have made are relatively irreversible, as is the case, for example, if costly infrastructures have been built or bought. If capital is more mobile, on the other hand, investors can more easily withdraw from the investment. The big problem is that if investors anticipate that the government will not upheld its promises, they may not invest in the first place, which is a sub-optimal outcome for both investors and the government. In this context, the capacity to make credible commitments is clearly important for policy-makers, and is indeed one of the preconditions for, for example, the successful liberalization of the telecommunication or electricity industry. Indirect evidence supporting this argument is given by Henisz (2002), who shows that infrastructure investment is positively influenced by institutions that limit the possibility of policy change and, therefore, increase the credibility of commitments. Stasavage (2002) comes to similar results for private investment in general. As Levy and Spiller (1994; Spiller 1993) have argued, delegation to IRAs is a means to increase the credibility of the commitment not to expropriate investors. Therefore, a first hypothesis is that IRAs should be more independent in economic regulation in general and in utilities in particular. One of the main goals of economic regulation is making markets work smoothly, which implies investors' confidence; the sunk costs that characterize investment in utilities mean that this confidence is even more important in this context, because the losses associated to an adverse regulatory change are more severe. While some authors have argued that the credibility problem is general and afflicts economic and social regulation alike (see e.g. Majone 1996), it seems clear that the lack of credible commitment capacity has particularly negative consequences when the goal is attracting investment, like in economic regulation, than when it is protecting consumers, like in social regulation. Although in the latter credibility pressures may not be entirely absent, they are certainly weaker than in the former. However, this does not mean that social regulators are necessarily less

<sup>&</sup>lt;sup>3</sup> Note that time-inconsistent preferences may arise even if the behaviour of the target actors is not in line with the assumptions of the rational-expectations model. Time-inconsistent preferences may follow also from unanticipated exogenous shocks and if the discount function of policy-makers is not exponential (as is commonly assumed) but hyperbolic (see Gilardi 2004: 65ff., Gilardi 2006).

independent, since there may be other incentives for delegation in this field, such as the possibility to shift the blame for regulatory failures (Hood 2002). In effect, some social regulators do enjoy considerable independence. For example, the Swedish pharmaceuticals regulator has an independence score of 0.69, which is higher than that of the Spanish electricity regulator (0.44). This is something that cannot be explained by the credibility argument.

A second rationale for granting independence to regulatory agencies may be linked to the political uncertainty problem (De Figueiredo 2002, 2003; Moe 1990; Wood and Bohte 2004). Political uncertainty arises when a government expects to be soon replaced by another government with different preferences, which may change some of its policy choices. In order to prevent this, the government may attempt to insulate policy from politics. Delegation to IRAs is a means to do so. This idea can be found in a prominent account of the telecom liberalization process in the United Kingdom:

"Beyond their ideological preference for the separation of regulation from policy, Thatcher administration officials favored independent regulators because of the dynamics of alternance in British politics. The party in power wants to be able to infiltrate the bureaucracy, but by the same token wants to guard it from infiltration by the other party. Thus Conservative Party leaders were keen to establish independent regulators that could not easily be 'captured' by the Labour party" (Vogel 1996: 131).

It must not be forgotten, however, that delegation has a double implication: self-binding and binding others. While the latter is clearly a benefit, the former is, in this perspective, a cost. The relative importance of these two factors is likely to vary. What happens after the fears of the incumbent have materialized (that is, after the incumbent has lost office) is crucial. If losing office means staying away from power for a long time, then the costs associated to self-binding will be more than offset by the benefit of binding the new government. On the other hand, if there is a high probability of regaining office shortly after having lost it, then delegation implies binding others for a short time and self-binding for a longer time. In this context, the costs are higher then the benefits. This is one of the main results of de Figueiredo's (2002) formal model: the choice to insulate policy from politics depends both on the risk of being replaced and the probability of future re-election. In other words, the most likely "insulators" are electorally weak groups, when they happen to be in power, an hypothesis that has found empirical support (De Figueiredo 2003). This argument has been examined in the context of IRAs by Gilardi (2005a). IRAs are more likely to be established by governments that face a high risk of being replaced by another government with different preferences, but more so when future re-election prospects are not good. Following these arguments, the second hypothesis is therefore that regulatory agencies should be more independent in countries where there is frequent change in the partisan composition of governments, but less so when the government losing office can expect a rapid comeback.

Note that this characterization permits, to some extent, to separate empirically the effects of the credibility problem from those of the political uncertainty problem. In effect, the two are obviously related: frequent turnover between governments with different preferences implies time-inconsistency, since the preferences of the government change each time that its partisan composition changes. However, in this perspective the relationship between political uncertainty and credibility problems (and therefore incentives to delegate) is linear, because the more political uncertainty there is, the less policy choices will be credible. By contrast, in the political uncertainty hypothesis the relationship between replacement risk and delegation need not be linear, since political uncertainty increases the attractiveness of delegation especially if re-election prospects are poor once office is lost.

The institutional context is also likely to matter. In particular, there is a consensus on the importance of veto players, whose number, distance and internal cohesion influence policy stability (Tsebelis 2002). On the other hand, two opposite accounts have been given for the precise role of veto players in relation to delegation. 4 Scholars studying central banks (e.g. Keefer and Stasavage 2002, 2003; Moser 1999) have argued that veto players are a precondition for credible delegation. If delegation can be easily reverted, then it will not increase policy credibility because it will be subject to the same problems of time-inconsistent preferences. When preferences change, agency independence does not protect policies because it can be revoked. Scholars in the field of regulation (e.g. Levy and Spiller 1994; Spiller 1993), by contrast, take a different stance and argue that veto players can effectively work as a functional equivalent of delegation for achieving credibility, since, like delegation, they increase policy stability. In a longitudinal study of the determinants of IRA creations, Gilardi (2005a) has found, in line with this view, that IRAs are less likely to be established in the presence of many constraints on the autonomy of the executive.<sup>5</sup>

This debate is in relation to credibility, but the arguments can be directly applied also for political uncertainty. From the first perspective, delegation is

<sup>&</sup>lt;sup>4</sup> Note that Tsebelis is agnostic about the impact of veto players on the design of bureaucratic structures. He thinks they only play a role in relation to the behavioural (or de facto) independence of bureaucracy (Tsebelis 2002: 242f.).

<sup>&</sup>lt;sup>5</sup> A distinct argument is that of Hallerberg (2002), who, in the context of delegation to independence central banks, maintains that veto players matter because they influence the capacity of each player to have a decisive impact on policy. The idea is that the costs of delegation, in terms of loss of control, are lower when there are many veto players, which could explain why central bank independence is negatively correlated with veto players.

useless as a means to insulate policy from politics if the new government can easily withdraw the independence that has been granted to the agency. From the second perspective, the political uncertainty problem is less severe in the presence of many veto players because, by increasing policy stability, they will make it more difficult for the new government to change policy. We thus have two clearly contrasted hypotheses. On the one hand, veto players are expected to be positively related to delegation: all else equal, the more veto players, the more delegation (veto players as precondition for delegation). On the other hand, veto players are expected to be negatively related to delegation: all else equal, the more veto players, the less formal independence (veto players as functional equivalent of delegation).

#### Data and methods

The dependent variable of the analysis is the formal independence of IRAs. To measure formal independence, I have developed an index that is composed of five dimensions, namely status of the agency head (for example, term of office and appointment and dismissal procedure), status of the members of management board, relationship with government and parliament, financial and organizational autonomy, and regulatory competencies (see Table 1).<sup>6</sup> The index goes from 0 (no independence) to 1 (full independence), and is obtained by taking the average of the five dimensions (for more details, see Gilardi 2002). As shown in the descriptive statistics presented in Appendix 1, some regulators (about 20%) have received a score of 0. These are cases where a Ministry was directly responsible for regulation, and where a separate authority was not established. On the other hand, no IRA is fully independent: the observed maximum is 0.83 (descriptive statistics and correlations for all variables are shown in Appendix 1).

<sup>&</sup>lt;sup>6</sup> Data have been collected through questionnaires sent to IRAs' officials. It is worth emphasizing that all the information the questionnaires aimed at collecting is factual, in the sense that it refers to formal procedures that are written down in statutes. Difficulties in identifying and accessing relevant documents as well as language limitations have prevented direct collection of data, which however would in principle have been possible.

 Table 1: Formal independence of IRA's: independence index

	Weight	Coding
Status of the agency head	0.20	
Term of office		
• over 8 years		1.00
• 6 to 8 years		0.80
• 5 years		0.60
• 4 years		0.40
• fixed term under 4 years or at the discretion of the appointer		0.20
• no fixed term		0.00
Who appoints the agency head?		
• the members of the management board		1.00
•a complex mix of the parliament and the government		0.75
•the parliament		0.50
•the government collectively		0.25
•one or two ministers		0.00
Dismissal		
• dismissal is impossible		1.00
• dismissal is possible, but only for reasons not related to policy		0.67
•there are no specific provisions for dismissal		0.33
<ul> <li>dismissal is possible at the appointer's discretion</li> </ul>		0.00
May the agency head hold other offices in government?		
•no		1.00
•only with the permission of the government		0.50
•yes / no specific provisions		0.00
Is the appointment renewable?		
•no		1.00
•yes, once		0.50
•yes, more than once		0.00
Is independence a formal requirement for the appointment		
•yes		1.00
•no		0.00

Status of the members of the management board	0.20
Term of office	
• over 8 years	1.00
• 6 to 8 years	0.80
• 5 years	0.60
• 4 years	0.40
• fixed term under 4 years or at the discretion of the appointer	0.20
• no fixed term	0.00
Who appoints the members of the management board?	
• the head of the agency	1.00
a complex mix of the parliament and the government	0.75
• the parliament	0.50
the government collectively	0.25
• one or two ministers	0.00
Dismissal	
dismissal is impossible	1.00
dismissal is possible, but only for reasons not related to policy	0.67
• there are no specific provisions for dismissal	0.33
<ul> <li>dismissal is possible at the appointer's discretion</li> </ul>	0.00
May the members of the management board hold other offices in government?	?
• no	1.00
<ul> <li>only with the permission of the government</li> </ul>	0.50
• yes / no specific provisions	0.00
Is the appointment renewable?	
• no	1.00
• yes, once	0.50
• yes, more than once	0.00
Is independence a formal requirement for the appointment?	
• yes	1.00
• no	0.00
Relationship with government and parliament	0.20
Is the independence of the agency formally stated?	4.00
• yes	1.00
• no	0.00
What are the formal obligations of the agency vis-à-vis the government?	1.00
• there are no formal obligations	1.00
presentation of an annual report for information only	0.67
presentation of an annual report that must be approved     the approved	0.33
the agency is fully accountable to the government  What are the formal abligations of the good gravite à vie the god gravet?	0.00
What are the formal obligations of the agency vis-à-vis the parliament?	1.00
• there are no formal obligations	1.00

<ul> <li>presentation of an annual report for information only</li> </ul>	0.67
<ul> <li>presentation of an annual report that must be approved</li> </ul>	0.33
<ul> <li>the agency is fully accountable to the parliament</li> </ul>	0.00
Which body, other than a court, can overturn the decisions of the agency where the latter has exclusive competence?	
• no body	1.00
a specialised body	0.67
• the government, with qualifications	0.33
• the government, unconditionally	0.00
Financial and organisational autonomy	0.20
What is the source of the agency's budget?	
<ul> <li>fees levied on the regulated industry</li> </ul>	1.00
<ul> <li>both the government and fees levied on the regulated industry</li> </ul>	0.50
• the government	0.00
How is the budget controlled?	
• by the agency	1.00
• by the accounting office or court	0.67
<ul> <li>by both the agency and the government</li> </ul>	0.33
• by the government only	0.00
Which body decides on the agency's internal organisation?	
• the agency	1.00
<ul> <li>both the agency and the government</li> </ul>	0.50
• the government	0.00
Which body is in charge of the agency's personnel policy (hiring and firing staff, deciding on its allocation and composition)?	
• the agency	1.00
<ul> <li>both the agency and the government</li> </ul>	0.50
• the government	0.00
Regulatory competencies	
• the agency only	1.00
the agency and another independent authority	0.75
• the agency and the parliament	0.50
• the agency and the government	0.25
• the agency has only consultative competencies	0.00

Political uncertainty is operationalized, following Franzese (2002), as the risk for a government of being replaced by another government with different preferences (replacement risk). This operationalization implies that replacement risk depends on two factors: the risk of losing office and the preferences of the new government. In effect, governments may be short-lived, but political

uncertainty will not be very high if there is little change in their partisan composition (and thus their preferences), as was the case, for example, in Italy during the late 1970s and early 1980s. Replacement risk is thus measured by the product of the hazard rate (the inverse of the actual duration of governments) and the standard deviation of the partisan composition of governments over seven years.<sup>7</sup> This procedure gives annual values of replacement risk; since the present analysis is cross-sectional, I have taken the mean value of replacement risk during the period 1960-2000. To test the hypothesis that replacement risk positively influences delegation, but less so if governments can expect a rapid comeback after having lost office, the analysis also includes the squared value of replacement risk. In effect, very high levels of replacement risk are most likely associated to a rapid turnover among different governments, meaning that a party or coalition can hope to gain office at relatively short intervals. According to the hypothesis, therefore, higher levels of replacement risk should increase the formal independence of agencies, but only to some extent. When turnover is so frequent that delegation implies more self-binding than binding others, the impact of replacement risk on formal independence should decline. If this hypothesis is correct, the relationship between replacement risk and formal independence should thus assume the shape of an inverted U. The inclusion of the squared term allows to look for the presence of this non-linear relationship.

With respect to veto players, there are currently three datasets publicly available that offer measures for this concept, namely the Database of Political Institutions (variable checks3) (Beck et al. 2001), the Political Constraints dataset (variable polcon3) (Henisz 2002), and George Tsebelis' veto players dataset<sup>8</sup>. These three variables aim at measuring essentially the same concept, since they are all focused on the number of parties in government, its alignment with parliament, and, if relevant, the alignment of the two chambers. The measure that is least concerned with alignment with parliament is checks3 (Beck et al. 2001), while both Tsebelis and Henisz explicitly insist on it. In the analysis I take the mean of the three variables as a measure for veto players. In effect, when several closely connected indicators are available, it is good practice to average them to get a more accurate measure (see e.g. Franzese 1999 for central bank independence). However, I also present the results of the analysis using each measure separately (see Appendix 2).

<sup>&</sup>lt;sup>7</sup> For more details, see Gilardi (2004: 176ff.).

<sup>8</sup> Downloadable at URL: http://www.polisci.ucla.edu/tsebelis/

<sup>&</sup>lt;sup>9</sup> Surprisingly, however, they are not highly correlated: polcon3-checks3 0.36, polcon3-veto players 0.24, checks3-veto players 0.76.

<sup>&</sup>lt;sup>10</sup> Since the three measures are not expressed in the same metric, I have z-standardized the three variables before computing the mean.

The dependent variable of the analysis is the formal independence of regulators, measured by an independence index that ranges from 0 to 1. For about 20% of cases, the score is actually 0. Given this clustering, OLS is not an appropriate estimator, and tobit or heckman models should be used instead (see Appendix 3 for more details). The tobit model is appropriate in case of censoring, namely when the value of the dependent variable fails to reach a threshold for some observations, to which the default value of 0 is attributed. On the other hand, the heckman estimator is appropriate in the presence of sample selection, namely when the value of the dependent variable is unknown because other variables determine whether observations fall in the selected sample (Breen 1996: 33ff.; Sigelman and Zeng 2000). Whether the tobit or the heckman offer the best modelisation of delegation to IRAs is debatable. The heckman's emphasis on explicitly modelling the selection process is appealing, but on the other hand many scholars have expressed doubts on the usefulness of this estimator for real datasets (see e.g. Puhani 2000). Moreover, since the "selection process" refers in this case to decisions to establish IRAs, a purely cross-sectional analysis is a rather crude way to investigate what is in fact a longitudinal process (see Gilardi 2005a). Given these problems, my strategy is to check whether the hypotheses hold across a range of specifications including not only the tobit and heckman models, but also OLS, which in any case can supply a useful baseline model.

### Statistical analysis

The results of the statistical analysis are shown in Table 2, while Appendix 2 displays additional analyses using the three veto players measures separately. In all the main models (Table 2), coefficients are significant and with the expected sign. Regulatory agencies are formally more independent in utilities than in other economic regulatory domains, and more independent in these than in social regulation.<sup>11</sup> This pattern is illustrated also in Figure 2, which shows that the three models produce substantially the same results. This evidence fits with the credibility hypothesis. Policy-makers are more interested in increasing the credibility of their regulatory commitments when investments are more likely to be discouraged by fears of adverse changes in the regulatory environment. As argued above, this problem exists in economic regulation in

<sup>&</sup>lt;sup>11</sup> This result holds also when the disaggregated measures for veto players are employed (see Appendix 2).

general, but in utilities regulation in particular since investments are relatively more irreversible and, therefore, the negative effects of regulatory changes are more severe. Accordingly, we should expect more delegation, which improves credible-commitment capacity, in utilities than in other economic regulation, and in economic regulation than in social regulation. This is what we observe empirically.

Table 2: The formal independence of regulators: statistical analysis

324*** .054)	0.378***	Selection	Outcome
	0.378***	1 705***	
.054)		1.700	0.131***
	(0.056)	(0.471)	(0.021)
22***	0.277***	1.623***	
.044)	(0.058)	(0.282)	
89***	1.912***	14.053***	
0.46)	(0.647)	(3.213)	
899**	-2.437**	-18.772***	
.849)	(1.011)	(6.051)	
063**	-0.079**	-0.531**	
.026)	(0.03)	(0.24)	
.047	-0.074	-1.663***	0.495***
0.06)	(0.087)	(0.377)	(0.017)
).41			
7.03			
	0.57		
	52.88		
		-0.62	22**
		(0.1	41)
	23	37.	.67
	83	2	3
106	106		
		0	<u></u>
	).41 7.03	0.41 7.03 0.57 52.88 23 83	0.41 7.03 0.57 52.88 -0.6 (0.1 23 83 2

Standard errors in parentheses (robust standard errors for clustering on countries for OLS and Heckman models). \*\* p<0.05, \*\*\* p<0.01.

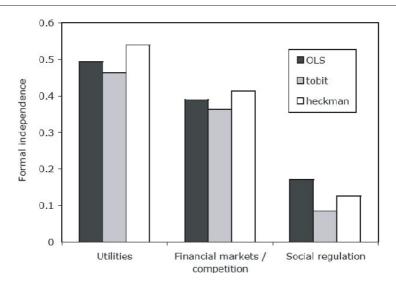


Figure 2: The formal independence of regulators across regulatory domains (predicted values)

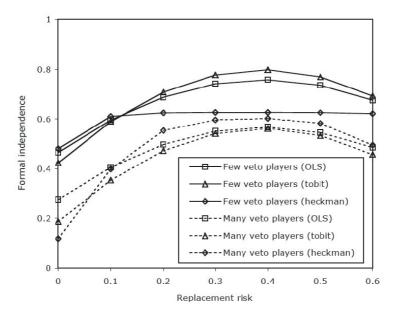
Note: predicted values computed on the basis of the models in Table 2.

Secondly, the analysis also supports the political uncertainty hypothesis, which argues that delegation can be a means for governments fearing replacement by a party or coalition with different preferences to insulate policy from politics so as to increase the durability of policy choices. Across the three main models, replacement risk influences the formal independence of regulators.<sup>12</sup> Interestingly, the relationship is non-linear, as shown by the negative coefficient of the squared replacement risk term and in Figure 3. The formal independence of regulators increases as replacement risk increases, but only to a certain point, after which further increases in replacement risk are associated to less formal independence. More concretely, regulators are least independent in countries where the partisan composition of governments is relatively stable. In this context, delegation means essentially self-binding. By contrast, in countries where there is more frequent alternation in government, delegation to IRAs can be employed to limit the room for manoeuvre of future governments. This is appealing especially since a moderate average level of replacement risk means that alternation is not so frequent to imply rapid comebacks after defeats, so

<sup>&</sup>lt;sup>12</sup> The second-order effect of replacement risk remains significant when using polcon3 as a measure for veto players, while it becomes somewhat unstable when using checks3 and Tsebelis' measure, though the sign is always negative (see Appendix 2).

that delegation results in binding others, which is the desired effect, at least as much as in self-binding, which in this perspective is a cost. Finally, in countries where on average there is a very frequent alternation between coalitions with different preferences in government, the probability of losing office is high, but so is that of re-gaining it relatively soon. Therefore, delegation implies self-binding at least as much as binding others and loses some of its attractiveness as a means for coping with political uncertainty. Less delegation should thus occur in this context, and in line with this interpretation Figure 3 shows that when replacement risk is on average very high, the formal independence of regulators tends to decline.

**Figure 3:** The formal independence of regulators as a function of replacement risk and veto players (predicted values)



Note: predicted values computed on the basis of the models in Table 2

An important limitation of this analysis is that, since it is cross-sectional, replacement risk is an average, so that we do not know exactly what was its level at the moment when the IRA was established. Similarly, using its squared value to capture the idea that the effect of replacement risk depends on the prospects of future re-election is quite a rough strategy. However, the results presented here confirm the findings of a longitudinal study of the decision to establish IRAs,

where replacement risk was measured yearly (Gilardi 2005a), which increases our confidence in the validity of the relationship highlighted in this analysis.

A third result of the analysis concerns the role of veto players. In the three main models, veto players have a negative impact on delegation<sup>13</sup>, meaning that, all else equal, regulators are formally less independent in countries with many veto players, as shown in Figure 3. This is an important result because the role of the institutional context in delegation relationships is controversial. On the one hand, scholars in the central banks tradition emphasize that if delegation can be easily revoked it is itself not credible and thus useless as a means to improve the credibility of policy commitments. On the other hand, in the regulation literature it is argued that policies are "naturally" more credible if policy change is difficult, so that many veto players can work as a functional equivalent of delegation for achieving credible-commitment capacity. The statistical analysis clearly supports this latter view: the formal independence of regulators decreases as the number of veto players increases, which is consistent with the argument that veto players can be a functional equivalent of delegation, and which goes against the idea that they are a precondition for credible delegation. The question remains, however, why two opposite patterns have been observed for central banks and regulatory agencies. The institutional context matters in both cases, but in opposite ways, despite the similarity of the issues at stake in the delegation process. This is indeed an intriguing question that deserves further consideration (for a first attempt to investigate this issue, see Gilardi 2005b).

Finally, a comment is needed on the fact that in the heckman model, the only variable that seems to matter at the outcome stage is the dummy for utilities. In other words, while at the selection stage (that is, for determining whether an IRA is established or not) replacement risk and veto players clearly matter, when it comes to explaining the amount of independence of IRAs the only significant difference is between utilities and other regulatory domains. It must be noted, however, that the factors that influence selection also indirectly influence the outcome; that is, the variables that determine whether there is an IRA or not also indirectly determine the amount of independence of IRAs (see equations 14 and 15 in Appendix 3). So what the heckman model shows is that replacement risk and veto players matter for the formal independence of IRAs, but only indirectly. However, this result may well be the consequence of one of the problems of the heckman estimator, namely the fact that it works best when the outcome and selection equations do not have many variables in common

<sup>&</sup>lt;sup>13</sup> The negative relationship between veto players and independence remains significant when using polcon3 and Tsebelis' measure, but not when using checks3 (see Appendix 2).

<sup>&</sup>lt;sup>14</sup> Additional analyses (not shown) indicate that replacement risk, veto players and the financial markets / competition dummy are by far not significant in the outcome stage.

(see Puhani 2000: 57f.). If they do share many variables, collinearity problems arise in the outcome equation (through  $\lambda$ , see equations 14 and 15 in Appendix 3), which weakens the robustness of estimates. In the end, the heckman model presented here cannot really be trusted, especially for the outcome equation (the determinants of formal independence, given that an IRAs has been established), but the fact that overall they point in the same direction as OLS and tobit estimates reinforces the confidence in the findings. These considerations further confirm the appropriateness of the strategy consisting in not relying on a single model but, rather, check if results hold across a range of specifications.

To sum up, the results of the statistical analysis lend support to both the credibility and the political uncertainty hypothesis. In line with the former, regulators are formally more independent in utilities than in other economic regulation, and in economic regulation than in social regulation. Consistently with the political uncertainty argument, the formal independence of regulators firstly increases as replacement risk increases, but then decreases when very frequent changes in the partisan composition of governments imply that a party or coalition is likely to gain office at regular intervals, so that delegation implies at least as much self-binding as binding others. Finally, the institutional context matters: regulators tend to be less independent in countries with many veto players, in line with the view that institutions that make policy change more difficult are a functional equivalent of delegation for achieving credible-commitment capacity (but also to cope with political uncertainty), rather than a precondition for it.

#### Conclusion

In this paper I have studied delegation to IRAs in Western Europe. During the past fifteen years, IRAs have been established in all countries and many sectors in what has in fact been a diffusion process (Gilardi 2005a). Like in most diffusion processes, the outcome has not been full convergence, and considerable diversity remains, for example in the amount of formal independence from governments that has been granted to IRAs.

Explaining this diversity has been the goal of this article. The results of the statistical analysis lend support to both the credibility and the political

<sup>&</sup>lt;sup>15</sup> Another critical point of the heckman model is that it presupposes a "good" selection equation; that is, in this case, the probit in the selection stage must accurately predict when IRAs have been established. In this respect the model works quite well since it correctly predicts 83% of the observations.

uncertainty hypothesis. The former argues that delegation to IRAs can be a means for politicians to increase the credibility of their policy commitments. In line with this view, regulators have been found to be formally more independent in utilities than in other economic regulation, and in economic regulation than in social regulation. On the other hand, the political uncertainty argument states that delegation can be employed by governments fearing replacement to prevent policies from being changed by the new government. The analysis has shown that, consistently with this reasoning, the formal independence of regulators firstly increases as replacement risk increases, but then decreases when very frequent changes in the partisan composition of governments imply that a party or coalition is likely to gain office at regular intervals, so that delegation implies at least as much self-binding as binding others. Finally, it has been shown that the institutional context matters: regulators tend to be less independent in countries with many veto players, in line with the view that institutions that make policy change more difficult are a functional equivalent of delegation for achieving credible-commitment capacity (but also to cope with political uncertainty), rather than a precondition for it.

These findings answer some questions but also raise new problems. Firstly, it remains completely unclear why the relationship between veto players seems to run in opposite ways for central banks and veto players. Research on central banks has shown, both theoretically and empirically, that many veto players are a precondition for credible delegation, while the results presented here show that for regulatory agencies veto players can be a functional equivalent of delegation. Future research should try to find out why it is so (for a first attempt, see Gilardi 2005b).

Secondly, this study has argued that governments delegate to IRAs partly to increase their credible-commitment capacity, but whether delegation actually delivers credibility is a separate matter, and indeed one that has received surprisingly little empirical attention. Does formal independence lead to credibility? There is nothing in this article that permits to answer this question, which is however very important also from a normative standpoint (is delegation "good" in credibility terms?).

Thirdly, this article is focused exclusively on the formal aspects of independence, but it is obvious that informal or de facto independence is also very important, and probably even more important. Much work is needed on this point, because of course tracking informal independence is difficult. A much-needed first step would be to devise comparative indicators of informal independence. Such indicators need not be quantitative; they should "simply"

<sup>&</sup>lt;sup>16</sup> If we exclude the plethora of studies that test the link between central bank independence and inflation, which can be viewed as an indirect test of the credibility properties of independence.

allow to compare different IRAs with respect to the informal relationships they maintain with governments, and more precisely to the capacity of the latter to influence decision despite the formal independence of the regulator. An interesting question would then be to see if, and how, formal independence is linked to informal independence. Is formal independence a guarantee for "real" independence, or on the contrary it is just something that is granted to regulators as a "ceremony" intended to legitimize the actions of policy-makers (Meyer and Rowan 1977)?

Finally, a crucial point that has been largely neglected so far concerns the consequences of IRAs on regulatory policies. Do IRAs matter? In fact, we do not know, and we should be worried about that. Delegation to IRAs comes at a cost, for example in terms of democratic legitimacy, and they can thus be accepted as an instrument of "good governance" only to the extent that they deliver "good" outputs. It is therefore high time that we find out if the current acceptance of IRAs as appropriate regulatory institutions (see e.g. OECD 2002) is a consequence of their effectiveness, or simply the result of their being taken for granted as an appropriate solution to the problems of market regulation.

## Appendix 1. Descriptive statistics and correlations

Tal	ble A	<b>4.1.1</b>	: D	escrip	otive	sta	tistic	S
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	Mean	Std. dev.	Min	Max	N
Formal independence	0.410	0.248	0.000	0.830	106
Utilities	0.302	0.461	0.000	1.000	106
Financial markets / compet.	0.283	0.453	0.000	1.000	106
Replacement risk	0.254	0.169	0.030	0.572	106
(Replacement risk) <sup>2</sup>	0.093	0.106	0.001	0.327	106
Veto players	-0.028	0.830	-1.488	1.758	106

Table A.1.2: Correlations

	Utilities	Financial markets / competition	Replacement risk	(Replacement risk)2	Veto players
Utilities	1.000				
Financial markets / compet.	-0.413	1.000			
Replacement risk	0.054	-0.053	1.000		
(Replacement risk) <sup>2</sup>	0.044	-0.052	0.975	1.000	
Veto players	0.009	0.043	0.287	0.235	1.000

## Appendix 2. Analysis with disaggregated measures of veto plaxers

Table A2.1: Veto players: polcon3

	OLS	Tobit	Heck	man
			Selection	Outcome
Utilities	0.319***	0.374***	1.647***	0.135***
annes	(0.055)	(0.056)	(0.483)	(0.021)
Pinancial manhata / annuatition	0.217***	0.274***	1.699***	
Financial markets / competition	(0.044)	(0.058)	(0.323)	
Replacement risk	2.036***	2.645***	18.274***	
	(0.651)	(0.769)	(5.212)	
(Replacement risk) <sup>2</sup>	-2.812**	-3.651***	-26.142***	
	(1.01)	(1.195)	(8.347)	
Veto players (polcon3)	-0.706***	-0.915***	-5.502***	
	(0.214)	(0.346)	(1.877)	
_	0.325***	0.283**	0.525	0.492***
Constant	(0.089)	(0.135)	(0.584)	(0.019)
R2	0.41			
F	22.87			
Pseudo R2		0.56		
LR chi <sup>2</sup>		53.13		
Rho			-0.5	61**
Wald chi <sup>2</sup>			(0.209)	
Censored observations		23	40.	.49
Uncensored observations		83	2	3
N	106	106	8	3
			10	06

Standard errors in parentheses (robust standard errors for clustering on countries for OLS and Heckman models). \* p<0.1, \*\* p<0.05, \*\*\* p<0.01.

Table A2.2: Veto players: tsebelis' measure

	OLS	Tobit	Heck	man
			Selection	Outcome
Utilities	0.323***	0.379***	1.65***	0.13***
attitues	(0.058)	(0.059)	(0.492)	(0.023)
Financial markets / competition	0.211***	0.271***	1.566***	
	(0.046)	(0.059)	(0.269)	
Replacement risk	0.894**	1.194*	10.141***	
	(0.35)	(0.645)	(3.093)	
(Replacement risk)2	-0.699	-0.988	-11.638**	
	(0.542)	(1.083)	(5.47)	
Veto players (Tsebelis)	-0.072***	-0.09***	-0.475**	
	(0.023)	(0.03)	(0.21)	
Constant	0.264***	0.194*	-0.185	0.499***
Constant	(0.076)	(0.105)	(0.504)	(0.018)
R <sup>2</sup>	0.42			
F	11.01			
Pseudo R <sup>2</sup>		0.57		
LR chi <sup>2</sup>		51.01		
Rho			-0.62	29***
Wald chi <sup>2</sup>			(0.1	.24)
Censored observations		23	32	.54
Uncensored observations		83	2	3
27	406	100	8	3
N	106	106	10	

Standard errors in parentheses (robust standard errors for clustering on countries for OLS and Heckman models). \* p<0.1, \*\* p<0.05, \*\*\* p<0.01.

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Table A.2.3. Veto plaxers: check3

	OLS Tobit		Heck	kman
			Selection	Outcome
	0.324***	0.378***	1.655***	0.131***
Utilities	(0.055)	(0.057)	(0.439)	(0.021)
	0.217***	0.273***	1.593***	(0.021)
Financial markets / competition	(0.045)	(0.059)	(0.275)	
	1.183**	1.538**	11.611***	
Replacement risk	(0.479)	(0.637)	(3.329)	
(Replacement risk)2	-1.471	-1.917*	-15.526**	
	(0.888)	(1.008)	(6.31)	
Veto players (checks3)	-0.03	-0.035	-0.192	
	(0.019)	(0.023)	(0.149)	
Constant	0.237**	0.154	-0.382	0.494***
Consum	(0.102)	(0.132)	(0.847)	(0.017)
R <sup>2</sup>	0.39			
F	16.47			
Pseudo R2		0.52		
LR chi <sup>2</sup>		48.64		
Rho			-0.56	55***
Wald chi <sup>2</sup>				193)
Censored observations		23	`	3
Uncensored observations		83	8	3
N	106	106	10	06

Standard errors in parentheses (robust standard errors for clustering on countries for OLS and Heckman models). \* p<0.1, \*\* p<0.05, \*\*\* p<0.01.

### Appendix 3. Models for censored and sample selected data

The standard tobit model (Tobin 1958) is defined as

$$\mathbf{y}_{i}^{*} = \mathbf{x}_{i} \boldsymbol{\beta} + \boldsymbol{\epsilon}_{i'} \tag{1}$$

$$y_i = y_i^*$$
 if  $y_i^* > 0$ , (2)

$$y_i = 0$$
 if  $y_i^* \le 0$ . (3)

The tobit is a two-stage model. In the first stage, the probability that  $y_i$  exceeds the threshold can be estimated through a probit:

$$P(y_i > 0 \mid x_i) = \Phi\left(\frac{x_i \beta}{\sigma}\right),\tag{4}$$

where  $\sigma$  is the standard deviation of a normal curve with mean zero, and is often assumed to be 1 (Breen 1996: 15). In the second stage, the expected value of  $y_i$  conditional on its being over the threshold is estimated through OLS:

$$E(y_i | y_i > 0; x_i) = x_i \beta + \sigma \lambda_i, \tag{5}$$

where  $\lambda_i$  is the inverse Mill's ratio (IMR), which is defined as

$$\lambda_{i} = \frac{\varphi\left(\frac{x_{i}\beta}{\sigma}\right)}{\Phi\left(\frac{x_{i}\beta}{\sigma}\right)}.$$
(6)

The denominator is the cumulative normal density value, which is obtained by computing predicted probabilities from the selection stage probit (equation 4), while the numerator is given by the standard normal density function (Breen 1996: 16):

$$\varphi\left(\frac{\mathsf{x}_{\mathsf{i}}\beta}{\sigma}\right) = \frac{1}{\sqrt{2\pi}} \exp\left(-\mathsf{x}_{\mathsf{i}}\beta\right)^{2} \frac{1}{2\sigma^{2}}.$$
 (7)

Note that tobit coefficients cannot be directly interpreted, as their direct relationship is with an unobserved latent variable that need not have substantive meaning (Roncek 1992). The tobit is most often estimated through maximum likelihood.

The heckman selection model (Breen 1996: 34ff.; Heckman 1979; Sigelman and Zeng 2000) is defined as

$$z_i^* = w_i \gamma + \mu_i, \tag{8}$$

$$y_i = x_i \beta + \varepsilon_i$$
 observed only if  $z_i^* > 0$ , (9)

where

$$\mathbf{u}_{i} \sim N(0,1) \tag{10}$$

$$\varepsilon_{i} \sim N(0,\sigma)$$
 (11)

$$\rho = \operatorname{corr}(\mathbf{u}_{i}, \varepsilon_{i}). \tag{12}$$

Following Heckman's two-step procedure, the model can be separated in two parts. The first models the probability of z = 1 with a probit:

$$P(z_i = 1) = \Phi(w_i \gamma). \tag{13}$$

In the second step, the expected value of y is estimated conditional on z=1 and on the independent variables:

$$E(y_i | z=1; x_i) = x_i \beta + \theta \lambda_i, \tag{14}$$

where

$$\lambda_{i} = \frac{\phi(w_{i}\gamma)}{\Phi(w_{i}\gamma)},\tag{15}$$

$$\theta = \rho \sigma. \tag{16}$$

Like the tobit, the heckman is often estimated through maximum likelihood, and its coefficients do not represent marginal effects.

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## Die formale Unabhängigkeit von Regulierungsbehörden: Ein Vergleich von 17 Ländern und 7 Sektoren

Dieser Artikel untersucht die Ursachen für die Übertragung von Vollmachten an unabhängige Regulierungsbehörden in Westeuropa. Zwei Argumente zur Erklärung der Variation im Grad der formalen Unabhängigkeit von Regulierungsbehörden werden diskutiert. Erstens, Regierungen können ihre Glaubwürdigkeit stärken, indem sie Aufgaben an unabhängige Regierungsbehörden delegieren, die nicht ihrer direkten Kontrolle unterstehen. Zweitens, die Übertragung von Vollmachten an unabhängige Regulierungsbehörden kann auch als Reaktion auf das politische Ungewissheitsproblem verstanden werden. Regierungen, die befürchten, von einer anderen Regierungskoalition mit unterschiedlichen politischen Präferenzen ersetzt zu werden, können mit Hilfe einer Übertragung von Vollmachten an eine unabhängige Regulierungsbehörde politische Entscheidungen der Kontrolle der zukünftigen Regierungskoalition entziehen. Ferner können Veto-Spieler als funktionales Äquivalent zur Delegation von Vollmachten verstanden werden, da sie die Stabilität der Politik beeinflussen und damit das Glaubwürdigkeits- und Ungewissheitsproblem entschärfen. Diese Argumente werden in der empirischen Analyse der formalen Unabhängigkeit von Regulierungsbehörden in 17 Ländern und 7 Sektoren bestätigt.

## L'indépendance formelle des agences de régulation : Une comparaison de 17 Etats et de 7 secteurs

Cet article étudie les causes de la délégation aux autorités indépendantes de régulation en Europe occidentale et cherche à expliquer les variations de leur indépendance formelle. Deux types d'arguments sont développés. Premièrement, la délégation des pouvoirs à des agences que les politiciens ne peuvent pas contrôler directement peut s'expliquer par le nécessité pour les gouvernements d'augmenter la crédibilité de leurs engagements en matière de régulation. Deuxièmement, la délégation peut être une réponse au problème de l'incertitude politique, qui surgit lorsqu'un gouvernement craint d'être remplacé par une coalition avec des préférences différentes, qui pourrait décider de changer les politiques existantes. De plus, les institutions politiques, notamment les veto players, peuvent constituer un équivalent fonctionnel de la délégation, puisqu'ils influencent la stabilité des politiques publiques et tendent donc à atténuer les deux problèmes de la crédibilité et de l'incertitude politique. Ces arguments concordent avec les résultats de l'analyse empirique de l'indépendance formelle des régulateurs dans dixsept pays et sept secteurs.

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