

# De jure and de facto independence of regulatory agencies

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## Abstract

Regulation by independent agencies rather than ministries is believed to result in better policy outcomes. Yet this belief requires one to accept a complex causal chain which leads from de jure independence to de facto independence from politics, to policy decisions and, ultimately, to policy outcomes. In this paper, we examine the link between de jure and de facto independence of regulatory agencies in Europe. We present new data on the chief executives of these agencies, and use these to calculate a proxy for the de facto independence of agencies from politics. We demonstrate that de facto independence can indeed be explained by de jure independence. Other determinants of de facto independence are the rule of law, coordination of the economy, size of the country, and GDP per capita. Contrary to our expectations, the number and polarisation of veto players have no effect, and the effect of de jure independence is the same regardless of the degree to which the rule of law is realised.

## 1 Introduction

Politicians in Europe have granted considerable independence to regulatory agencies because of the widespread belief that having more independent agencies results in better policy outcomes. Scholars emphasise that independent regulatory agencies (IRAs) resolve the problem of time-inconsistent policy preferences which politicians face, and hence produce Pareto-improving regulatory decisions (Kydlund and Prescott 1977; Majone 1996). Governments themselves indicate that the creation of independent agencies has allowed “central ministries to concentrate on policy-making”, resulting in “increased

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efficiency and innovation” (OECD, 2002, p. 21). However, for independence to lead to better policy outcomes, a complex causal chain needs to operate, which leads from statutory provisions granting independence, to behavioural patterns demonstrating independence, to policy decisions and, ultimately, to policy outcomes.

So far, studies on IRAs have mainly focused on the determinants of de jure independence – the formal grant of independence found in statutes (e.g., [Gibaldi 2002](#); [Elgie and McMenamin 2005](#); [Yesilkagit and Christensen 2010](#)). Little work has been done on the next link in the chain, connecting de jure and de facto independence of regulatory agencies (but see [Maggetti 2007](#), and [Roness et al. 2007](#)). This may be due to the presumption that higher degrees of de jure independence also imply higher degrees of de facto independence. As Pollack puts it, “[c]eteris paribus, [...] we should expect agencies to be most responsive to their legislative principals when control mechanisms are extensive, and most autonomous when administrative procedures are few and oversight is weak” (2002, p. 202).

In this paper, we test this presumption, and examine the relationship between the de jure and de facto political independence of regulatory agencies. By the de facto political independence of an agency, we mean the degree to which the agency takes day-to-day decisions without the interference of politicians – in terms of the offering of inducements or threats – and/or the consideration of political preferences. We focus on regulatory agencies in seventeen West European countries, working in seven sectors (competition, financial markets, energy, telecoms, pharmaceuticals, food safety, the environment; cf. [Gibaldi 2005](#)). By agencies, we mean bodies which possess some public authority, but which are organisationally separate from the relevant government ministry or department (cf. [Thatcher and Stone Sweet 2002](#), p. 2). Regulatory agencies are preoccupied with the creation of rules, the evaluation and scrutiny of economic behaviour, and the application of sanctions for non-compliance.

We present two innovations in this study. First, we use a new measure of de jure independence which builds upon many of the same items as previous indices, but which is constructed using a different method of aggregation. Second, we introduce new data on the appointment of chief executives of European IRAs, and use these to create a proxy for the de facto independence of agencies from politics. We then use these measures to assess the impact of de jure independence on de facto independence, accounting for such factors as the rule of law, salience of the policy area, coordination of the economy, and the number of veto players in the polity.

The paper proceeds as follows. In the next section, we set out how de jure independence and the other explanatory factors are hypothesised to affect de facto independence. In section 3, we introduce our new measures of de jure and de facto independence, and describe the operationalisation of the other variables. Our analysis is presented in section 4, followed by a discussion of the results.

## 2 Theory and hypotheses

There are a number of factors which may explain why some agencies hold a large degree of political independence whilst others do not. In this section, we first discuss the most closely related variable, *de jure* independence, before going on to discuss the role of variables related to the political system (veto players, coordination of the economy, issue salience) and to the agency (agency age), as well as a number of control variables (population, GDP per capita).

**De jure independence** From the earliest literature on central bank independence, scholars have made a distinction between political independence as found in the law, and independence as manifested by actual behaviour. Typically, *de jure* independence is not simply a matter of whether the law says that a given agency is organisationally separate or independent (although such legal statements may have hortatory value and are often included in indices of *de jure* independence). Rather, it is about whether the law contains certain provisions which are either taken to be constitutive of *de facto* independence, or to cause it. In light of this distinction and this understanding of *de jure* independence, it is natural to ask whether *de jure* independence actually causes *de facto* independence. This is an important question, for it is by no means obvious that the two should go hand-in-hand.

First, the practice of the law may depart substantially from the text of the law, making *de jure* provisions unreliable indicators. The practice of the law may be more beneficial for agency independence than the text of the law might imply. For example, statutory drafters in Commonwealth countries typically grant ministers broad discretionary powers which are not intended to be used regularly by the minister, but which reflect the minister's role as an agent of the Crown, and which allow for ministerial action in the event of unexpected scenarios. In most other countries, however, it is more common for the practice of the law to be worse for the independence of the agency, since provisions which are onerous for politicians may simply be ignored, particularly if those who are ignoring them have a parliamentary majority which is ready to accommodate such behaviour.

Second, there may be important non-legal determinants of independence. Again, this may have either beneficial or negative consequences for *de facto* independence of agencies. We list a number of important non-legal determinants in the remainder of this section. Admitting a role for non-legal determinants of independence does not, however, imply that *de jure* independence is unimportant. Scholars working on the judiciary have concluded that *de jure* independence is related to the *de facto* independence of supreme courts, although the link is not particularly strong (Hayo and Voigt, 2007). However, for regulators, the picture may be different: focusing on 16 West European regulatory agencies, and using fuzzy-set analysis, Maggetti (2007) found that a higher degree of *de jure* independence is neither a necessary nor a sufficient condition for a higher degree of *de facto* independence. Nevertheless,

we hypothesize that

**H1.** IRAs with higher degrees of de jure independence possess higher degrees of de facto independence.

**Rule of law as interaction** In light of the skepticism expressed by Maggetti (2007) considering the impact of de jure independence, it seems wise to ask: is the impact of de jure independence mediated by certain other conditions such that greater de jure independence has no net effect?

The rule of law is a natural candidate for this role as a factor mediating the impact of de jure independence. De jure independence is theorised to affect de facto independence by placing legal limits on politicians' ability to sanction or reward the regulator. If, however, legal limits are routinely ignored, as happens when the rule of law is only weakly established, then politicians retain substantial discretionary power to sanction and/or reward the regulator, thereby vitiating its independence. Consequently, we hypothesise that

**H2.** The effect of de jure independence on the de facto independence of an agency will be greater in political systems where the rule of law is more firmly established.

**Rule of law as main effect** There is, however, reason to consider rule of law as having an independent and positive effect on the independence of regulatory agencies. One of the central components of the rule of law is the presence of a judiciary which is independent of the executive of the day, and which can defend citizen's legally-guaranteed rights against those who transgress them (Raz, 1990).

Consequently, societies in which the rule of law is firmly established will be societies which have made their peace with the idea that there are other sources of independent power and authority than the elected representatives. IRAs may therefore benefit from a displaced tolerance of independent institutions. Thus,

**H3.** The more firmly the rule of law is established in a country, the more independent the IRAs in that country

**Country size** There is a long tradition of literature arguing that small states are more likely to display a range of democratic virtues (Dahl and Tufte, 1973, pp. 5-7). Indeed, small countries are more likely to be democratic (Ott, 2000), and more likely to have established the rule of law (Olsson and Hansson, 2009). Insofar as the recognition of independent sources of power, such as IRAs, can also be considered to be a democratic virtue, we might also expect small states to have more independent regulators, even after controlling for the effects of the rule of law on independence.

At the same time, small states spend a disproportionate amount of their national product on public services, both because of fixed costs in public service provision (Alesina and Wacziarg, 1998) and because of increased electoral pressure in smaller states (Remmer, 2010). As a result, the role of the state in small states may be overwhelming, and “such state ubiquity... can foster nepotism, cronyism, patronage, and political clientelism”, as opponents and supporters are more easily identified and (proportionally) more easily rewarded (Srebrnik, 2004, pp. 334-335). Each of these practices is inimical to independence.

Hence two alternative hypotheses can be formulated on the impact of the rule of law:

H4. a The smaller the country, the more independent the IRA.

H4. b The smaller the country, the less independent the IRA.

**Agency age** There are sound theoretical reasons for expecting older agencies to be more independent, as agency age constitutes either a resource in itself, or a means of acquiring additional resources. New-born agencies are “highly dependent actors whose survival depends on their abilities to secure resources from older, well-established [actors]... With age, an agency acquires legitimacy, clients, and an established set of network relationships which provide it with access to resources and a relatively secure niche” (Lincoln and McBride, 1985, p. 10). Indeed, older agencies have been shown to be better at securing resources (Hofferbert and Urice, 1985) and policy autonomy (Roness et al., 2007; Laegreid et al., 2005). We consequently hypothesise that

H5. The older the agency, the more independent it will be.

**Veto players** Actions taken by politicians in order to reward or sanction regulators may often require the agreement of multiple actors. This may be because the action in question requires the formal passage of an act in parliament, and because no single party has a majority. Or, it may be because the action in question can be taken by the executive or an individual ministry, but cabinet and intra-ministry decision making procedures require agreement between coalition members in order to prevent the coalition from breaking down.

The more veto players – that is, the more actors whose agreement is necessary for an action to be taken – the more difficult it will be for politicians to sanction or reward the regulator through legislative or executive measures. The more difficult it is for politicians to sanction or reward, the more independent the regulator will be. We should therefore expect the number of veto players to be positively related to de facto independence (Maggetti, 2007).

This is particularly the case where political parties are polarised. Strictly speaking, consideration of the parties’ ideal points in  $n$ -dimensional space is

*prior* to counting the number of veto players. In practice, however, the number of veto players is often identical to the number of parliamentary parties in the parliamentary majority, irrespective of the closeness of their positions. Consequently, the greater the polarisation of these parties, the less likely it is that any individual potential veto player will be absorbed within the ideal point of any other party, and consequently the more likely it is that the number of veto players will remain high. We should therefore expect that polarisation will also be positively related to de facto independence.

Consequently,

**H6.** The more veto players in a polity, or the greater the ideological distance between them, the more independent the IRA.

**Political salience** As politicians have only limited time and resources, they will pay more attention to some agencies than to others. The political salience of the policy area in which an agency works is an important determinant of political attention. Moreover, it is also believed to be an important determinant of political independence. Calvert et al. (1989, p. 590) explain that “in those areas in which they care the most, politicians will expend greater effort and resources in reducing the uncertainty that affords bureaucrats the opportunity for discretion.” Hence we pose the following hypothesis:

**H7.** The greater the salience of the policy area covered by the regulatory agency, the less independent the agency.

**Coordination of the economy** As coordinated market economies (CME) are known for their extensive networks linking business and governments, and as these networks usually taken to be inimical to independent policy-making, we should expect agencies to be less independent in CMEs. The networks in CMEs primarily coordinate employers, and only secondarily link business to government, and they need not necessarily play a role for semi-detached parts of government such as independent agencies. Nevertheless, at least one scholar has hypothesised that CMEs should have less independent regulatory agencies (Maggetti, 2007, p. 274).

In that same study, however, not only was the hypothesis that CMEs have less independent regulatory agencies not confirmed, the link ran precisely in the opposite direction to that predicted. One explanation is that whilst the types of coordination networks found in CMEs are inimical to independence *simpliciter*, they are particularly harmful to independence from regulatees; but dependence on regulatees may bolster independence vis-à-vis politicians. “An agency cannot be a servant of two masters: if it is scarcely independent from the politicians, it should be highly independent from those being regulated” (Maggetti, 2007, p. 281). Thus,

**H8.** The more coordinated the market economy in a country, the more independent the regulatory agency

### 3 Operationalisation

Details and sources for most of the variables used in this analysis can be found in Table 2 at the end of this section. For two particularly important variables – de jure and de facto independence – we describe our sources and methods in more detail.

#### Measurement of de facto independence

Precise measurement of the degree of de facto independence of a regulatory agency is extremely difficult. Whilst it is possible (see Maggetti 2007), it is exceedingly complex to produce comparable measures for enough agencies to permit statistical analysis. We therefore rely on two proxy measures of independence which have been developed in the literature on central bank independence (Cukierman et al., 1992; Cukierman and Webb, 1995): a measure of the average turnover of the chief executive of the agency (TOR), and an index of political vulnerability (VUL).

Our turnover proxy (TOR) is based on the following reasoning. Where chief executives serve for extremely short terms, they are both less willing to defend the agency and less able: less willing, because any cost they incur in standing up to politicians now will likely not produce future benefits for them, but rather for their eventual successors; less able, because defending the agency vis-à-vis the government or elected politicians requires a degree of mastery of one's job which is difficult to acquire in a limited period (especially in the kind of technical or specialised subject areas which are regulated by independent agencies). The measure is simply the reciprocal of the average tenure of chief executives of an agency. Thus, if the average tenure is around five years, the value of TOR is  $\frac{1}{5} = 0.20$ .

The political vulnerability proxy (VUL) approaches the issue of independence not from the perspective of the agency head, but from the perspective of incoming governments. VUL is a simple percentage of the number of government changes which were followed within six months by a change in the agency head. Hanretty (2010) explains the logic behind VUL as follows:

If, following a new government, there is a change in the chief executive, then either the chief executive reached the end of her term, or left early. If she reached the end of her term, it may be that the terms of chief executives are designed so as to coincide with changes in government. . . . If this is the case, then one may assume that the chief executive is, in some sense, the expression of a government choice. If the terms do not coincide by design, then the fact that they did so may create this impression in any case. If, by contrast, the chief executive left early, she was either constrained to resign, or did so of her own accord. If she was constrained to

resign, this may represent the introduction of some new constraint connected to the government. If she left of her own accord, this may reflect a belief that the government should have a ‘clean slate’ to influence the forthcoming selection of a chief executive.

To calculate TOR and VUL, we gathered data on the tenure of 288 chief executives of regulatory agencies in Europe, using information from press releases from agencies and governments, and from newspaper searches using Lexis-Nexis.<sup>1</sup>

Neither of our measures is a perfect proxy for independence. In particular, lower values of TOR – which correspond to longer average tenure – seem to have little to do with de facto independence. What does it matter for de facto independence if the chief executive typically serves eleven years instead of ten years? Only at higher values – and in particular, values greater than 0.20, which would imply that the chief executive typically serves for a shorter period than the modal European legislature – does TOR seem to indicate problems of low de facto independence (Laurens et al., 2009, p. 17). Nevertheless, TOR is easy to calculate, and the median in our sample is almost exactly 0.20, suggesting that TOR does discriminate in the specific case of European regulatory agencies.

VUL also suffers from imperfections. If VUL is intended to identify ‘partisan appointments’, there is a risk of both false positives and false negatives. False negatives may occur because partisan appointments were made either before the new government took office (anticipated reactions), or because a partisan appointment was made outside the six-month window. By making this window longer, one decreases the risk of false negatives, but increases the risk of false positives, and vice versa. We believe the six-month window is justifiable, since there is no indication from our data that a large number of appointments are made shortly after this window. In fact, there is a relatively large cluster of appointments made *before* this window (see Figure 1), which suggests against using a much shorter window.<sup>2</sup>

False positives may occur due to chance replacements of the chief executive: the shortest gap between new government formation and the appointment of a new chief executive is 2 days, when Jean Syrota became head of the French *Autorité des marchés financiers* (AMF) two days after the formation of a new Jospin government, which hardly seems long enough for the new government to have made its decision.

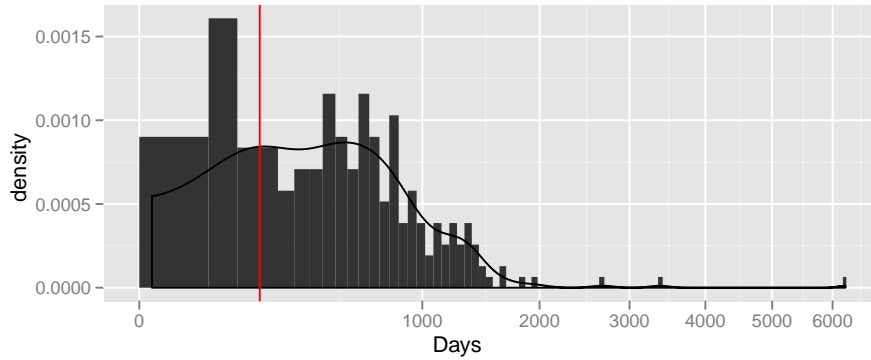
False positives and negatives are not the most serious problem with VUL.

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<sup>1</sup> Where information on the day or month of appointment was missing, we imputed the first day of the month, and January. Since the inclusion of recently appointed chief executives might unfairly bias TOR downwards, we included currently-serving chief executives’ tenure in the calculation of TOR only if TOR would not decrease as a result.

<sup>2</sup> We re-ran our model calculating de facto independence on the basis of a three-month window instead of a six month window (results available on request): the main variables – de jure independence, rule of law, GDP per capita and coordination – remained significant; population ceased to be significant and the interaction between de jure independence and the rule of law was significant but in the opposite direction to that expected.

**Figure 1:** Time from appointment to preceding instance of government formation, square-root scale



**Note:** Red line indicates 180 days after government formation.

Rather, the limited number of governments which have formed since these regulatory agencies have been established means that VUL is an extremely coarse indicator. Whilst we would expect most values of VUL to be in the range of, say, one-tenth to one-third in the long-term, calculating VUL on the basis of one or two government changes makes this impossible.<sup>3</sup>

Combining these two proxies can help mitigate the error present in each. Although the two measures are only weakly correlated ( $r = 0.24$ ), this is largely due to a number of cases where VUL is zero, but which  $TOR > 0$ . We average the two measures, and then subtracted the result from one in order to give a measure of independence (since independence increases as TOR and VUL decrease). Since the resulting measure was not normally distributed, we carried out a Box-Cox transformation on the measure, and scaled the result to have a standard deviation of one.

Figure 2 plots values of our measure by country and by sector; countries are plotted in ascending order of mean de facto independence; sectors are plotted left to right in increasing order of mean de facto independence.

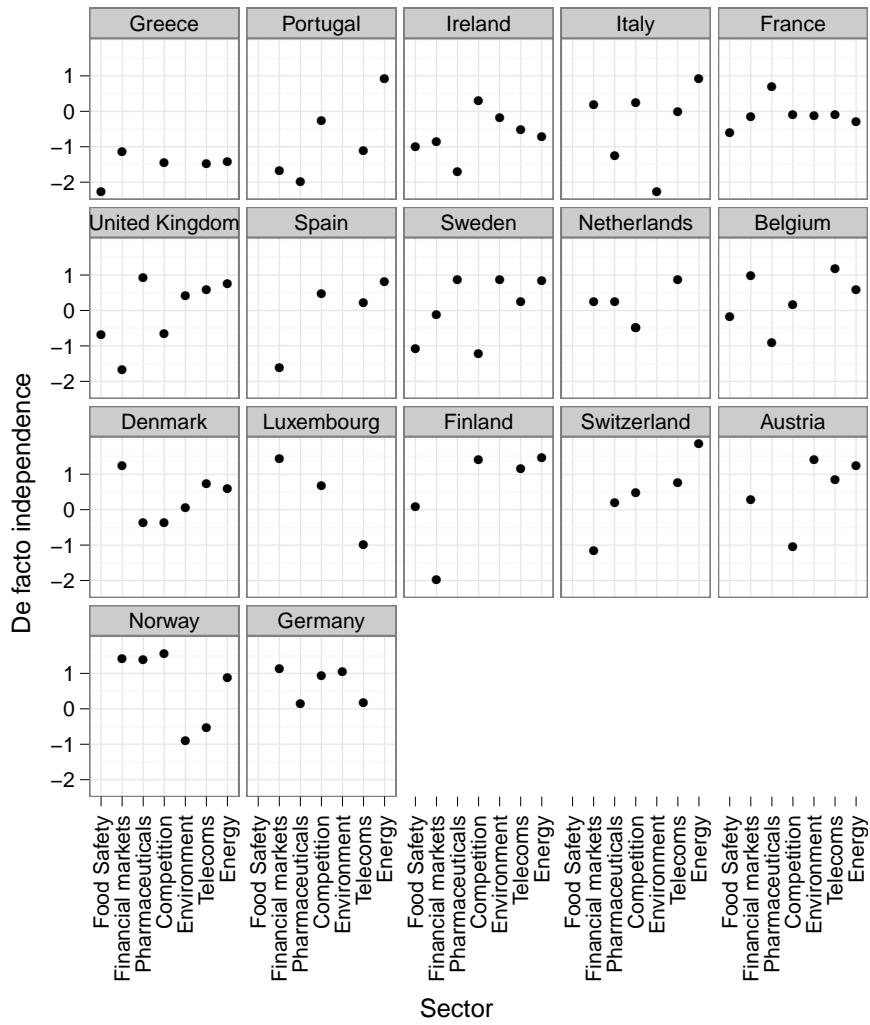
### Example

We demonstrate our measure with two examples: the Greek and German financial markets regulators. Financial market regulators are the second least independent category of regulator in our analysis; Greece and Germany are the countries with the least and the most independent regulatory agencies respectively.

In Greece, the average tenure of the chief executive of the financial market

<sup>3</sup> Three regulators' scores for VUL are calculated on the basis of one government change; eight on the basis of two.

**Figure 2:** De facto independence by sector by country



regulator, the Hellenic Capital Markets Commission, has been a little over three years. Whilst only one of the five government changes during the period resulted in a change in the chief executive of the regulator, the change was drastic: following the March 2004 general election and the formation of Kostas Karamanlis' first government, the entire board of the regulator was replaced, and a new chief executive, Alexis Pilavios, was appointed. Shortly after the chief executive under the PASOK governments, Stavros Thomadakis (who was married to a minister in the Simitis government), was prosecuted for negligence.<sup>4</sup>

In Germany, by contrast, the *Bundesanstalt für Finanzdienstleistungsaufsicht* has had just one chief executive since its formation in 2002, Jochen Sanio, who, despite being a member of the SPD, has survived the Grand Coalition and the subsequent CDU/CSU-FDP coalition, despite allegations of embezzlement within the regulator.<sup>5</sup>

## Measurement of de jure independence

Measures of de jure independence have been proposed for central banks, supreme courts, and regulatory agencies. Most of these measures share a large number of index items which relate to the method by which members of the board or court are appointed; their tenure in office; the provisions for their dismissal, and the relationship between the organisation and the legislature and the executive respectively, in particular concerning the reporting requirements faced by the organisation. The most important index of de jure independence for our purposes is the index created by Gilardi (2002, 2005), which in turn incorporates many index items found in earlier work on central bank independence by Cukierman et al. (1992). A list of these items, and the response categories for each item, is found in Table 1.

There are, however, some issues with the items and the scoring used in the Gilardi index which prevent it from being used directly. In a previous paper (Koop and Hanretty, 2009), we have argued that this index, and others like it, suffer from at least three problems: they assume an order for certain response categories which is only weakly justified, or not at all; they weight items according to criteria which are either arbitrary or which are based on rational ignorance about the contribution of each item; and they assume that response categories are scale variables (and not just ordinal categories). In order to deal with these problems, we gathered data on 175 regulatory agencies worldwide, and developed a latent trait model of de jure independence.

This latent trait model allowed us to test (a) which item response categories were poorly ordered; (b) which items did not fit the latent trait at all (which was often a result of poor ordering); and (c) the contribution made by each item, in terms of its ability to discriminate with respect to the latent trait; and

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<sup>4</sup> "Former Bourse, Capital Market Heads Stand Trial For Breach Of Duty", Athens Newswire, 24th June 2004

<sup>5</sup> "German regulator set to have a board", *Financial Times*, 22nd May 2007

**Table 1:** Indices of de jure independence

Item (Gilardi, 2005)	Item (Koop and Hanretty, 2009)	Weight (Gilardi)	Weight (Koop/Hanretty) <sup>†</sup>
Agency head term of office	...	1	0.55
Agency head appointing body	Agency head term fixed? <sup>‡</sup>	NA	1.16
Agency head dismissal provisions	Not included	1	NA
	...	1	0.58
Agency head incompatibility provisions	... and such provisions exist <sup>‡</sup>	1	0.16
	...	1	1.52
Agency head renewable?	... and such provisions exist <sup>‡</sup>	NA	1.38
Agency head formally required to be independent	...	1	1.06
	...	1	0.96
Board member term of office	...	1	1
Board members appointing body	Board members' term fixed? <sup>‡</sup>	1	1.06
Board members dismissal provisions	Not included	1	NA
	...	1	0.50
Board members incompatibility provisions	... and such provisions exist <sup>‡</sup>	1	0.35
	...	1	1.25
Board members renewable?	... and such provisions exist <sup>‡</sup>	1	1.42
Board members formally required to be independent	...	1	1.35
	...	1	1.17
Agency independence stated?	...	1.5	1.09
Agency reporting requirements to gov't.	...	1.5	0.36
Agency reporting requirements to parl't.	Not included	1.5	NA
Agency funding source	...	1.5	0.13
Agency budget control	...	1.5	0.16
Agency internal organisation control	...	1.5	0.48
Agency personnel control	...	1.5	0.13
Agency has exclusive competence?	Not included	5	NA

<sup>†</sup> Discrimination parameters have been recalculated using Board member term of office as a reference category equal to one.

<sup>‡</sup> This item had been a low-scoring response category in the preceding item; we separated it out

**Table 2:** Descriptive statistics

Variable	Range	Mean	SD	Source
De facto independence	[−2.25, 1.84]	0	1	
TOR	[0.04, 1.04]	0.24	0.16	
VUL	[0, 1]	0.11	0.18	
De jure independence	[0, 0.99]	0.45	0.22	Koop and Hanretty (2009)
Rule of law (1998-2008)	[0.62, 1.94]	1.56	0.4	Kaufmann et al. (2009)
Veto players (1991-2000)	[1, 6.13]	2.63	1.4	Tsebelis (2002) <sup>a</sup>
Polarisation (1996-2006)	[0, 2]	1.44	0.71	Beck et al. (2001), as updated
Political salience	[1, 13.5]	5.6	3.2	Laver and Hunt (1992) <sup>b</sup>
Age	[3, 76]	19.2	13.8	Gilardi (2008)
Coordination	[0.06, 1]	0.62	0.26	Hall and Gingerich (2009) <sup>c</sup>
Population ('000)	[447, 82240]	24150	25800	Heston et al. (2009)
GDP per cap.	[17610, 59440]	28210	7071	Heston et al. (2009)

<sup>a</sup> Most of the data are taken from Tsebelis' website at

[http://sitemaker.umich.edu/tsebelis/veto\\_players\\_data](http://sitemaker.umich.edu/tsebelis/veto_players_data). In the case of missing data, we have calculated the number of veto players using the procedure described by Tsebelis (1995)

<sup>b</sup> Saliency of the relevant supervisory minister; except that Switzerland was imputed the values for Austria.

<sup>c</sup> Except that Greece was given a value half-way between the United Kingdom and the United States, and Luxembourg was given the same value as Belgium. These codings based on Sioroff (1999)

(d) the distance (in terms of the latent trait) between each response category within an item. We found that four items – the agency's reporting requirements to the legislature, whether or not the agency had exclusive competence; and the appointment method used for the head of the agency and the agency board – were either unrelated to the latent trait of de jure independence, or were poorly ordered. We therefore dropped these items to calculate the trait scores for de jure independence for each agency.

That model was estimated on data from a wide range of agencies in Europe and in the rest of the world. In this paper, we use the same data gathered by Gilardi (2005), but we calculate the degree of de jure independence by using (a) the items which performed as expected in, and (b) the parameter estimates we obtained from, our previous model. Note that using slightly older data may exert a downwards bias on the effect of de jure independence if there has been a general increase in the de jure independence of agencies. The items, and their discrimination parameters (which can be considered as analogous to weights in a normal index) are reported in Table 1.

## 4 Analysis

We carried out multivariate linear regression on the 84 regulators for which we had data for all variables. The results are shown in Table 3, with non-significant terms removed iteratively. Standard errors are Huber-White robust standard errors clustered by country (White, 1982).

Table 3: OLS models

	De facto.1	De facto. 2	TOR. 1	TOR. 2	VUL. 1	VUL. 2
Intercept	-16.70*** (3.23)	-16.82*** (4.02)	2.53* (1.06)	2.51* (1.00)	3.10*** (0.49)	3.06*** (0.44)
De jure	2.60** (0.82)	1.01* (0.47)	-0.34** (0.12)	-0.12 <sup>†</sup> (0.07)	-0.32* (0.14)	-0.15** (0.05)
Rule of law	1.63*** (0.38)	1.02*** (0.25)	-0.18 <sup>†</sup> (0.09)	-0.10 <sup>†</sup> (0.05)	-0.19** (0.06)	-0.12*** (0.03)
Veto players	0.06 <sup>†</sup> (0.03)		0.02 <sup>†</sup> (0.01)	0.02 <sup>†</sup> (0.01)	-0.04*** (0.01)	-0.03*** (0.01)
Polarization	-0.25 <sup>†</sup> (0.15)	-0.26 (0.18)	0.00 (0.04)		-0.00 (0.02)	
log(Population)	0.15* (0.06)	0.14* (0.06)	-0.03 (0.02)	-0.03 <sup>†</sup> (0.02)	-0.03*** (0.01)	-0.03*** (0.01)
log(GDP per cap.)	1.16*** (0.28)	1.26** (0.37)	-0.15 <sup>†</sup> (0.09)	-0.17 <sup>†</sup> (0.08)	-0.23*** (0.05)	-0.23*** (0.04)
Age	-0.00 (0.01)		-0.00 (0.00)		0.00 (0.00)	
Coordination	1.33*** (0.27)	1.52*** (0.36)	-0.26*** (0.07)	-0.24*** (0.06)	0.03 (0.05)	
Saliency	-0.01 (0.03)		-0.00 (0.00)		0.01 (0.01)	0.00 (0.00)
De jure * rule of law	-1.04 <sup>†</sup> (0.61)		0.15* (0.07)		0.11 (0.10)	
N	84	84	84	84	84	84
R <sup>2</sup>	0.34	0.32	0.28	0.27	0.30	0.28
adj. R <sup>2</sup>	0.25	0.27	0.18	0.21	0.20	0.23
Resid. sd	0.82	0.81	0.14	0.14	0.13	0.13

Robust standard errors in parentheses

<sup>†</sup> significant at  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

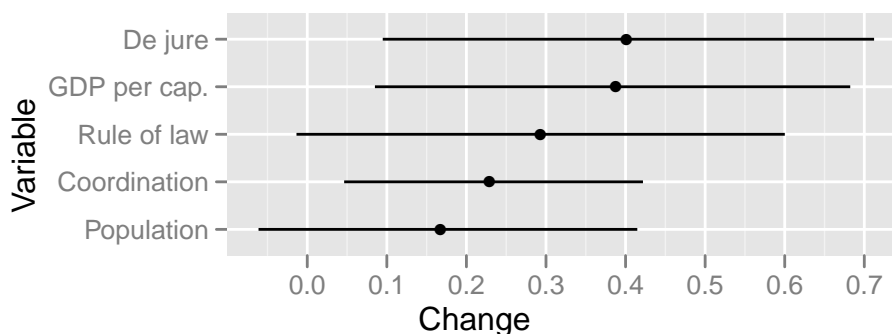
The table shows six models with three different dependent variables: our measure of de facto independence, and the component parts of that measure, TOR and VUL. The first model for each dependent variable is the full model with all predictors included: this model is somewhat overspecified. The second model for each variable is a reduced model after step-wise automated model selection,<sup>6</sup> which shows a number of significant variables.

As the table shows, each of the models perform moderately well in explaining variation in our measure of de facto independence, with the two models explaining de facto independence performing better than those explaining turnover or political vulnerability. The explained variation would, we believe, increase were the measurement of our dependent variable less noisy, and were there more predictors of independence at the level of the regulator.

De jure independence, contra skeptical predictions, did turn out to be a significant predictor of greater de facto independence. However, the interaction between de jure independence and the rule of law did not have the expected

<sup>6</sup> Selection based on improvement in Akaike's Information Criterion; limit of four steps of model improvement.

**Figure 3:** Effect of one standard deviation change in each variable on de facto independence



sign: in model 1, de jure independence has a *greater* effect in countries with lower levels of rule of law. This effect, however, was only significant at the 0.10 level in the full model, and was dropped in the reduced model. In any case, the independent effect of rule of law itself was far more important, substantively and statistically, being significant at the 0.05 level in five out of the six models, and affecting de facto independence in the hypothesised way.

Our two political variables – veto players and polarisation – were not significant in the main model, had the wrong sign in the model for turnover, and were only significant in the expected direction in the model for political vulnerability. Those variables which related to the life of the agency – age and the salience of the issue area – were also not significant. This finding goes against a number of studies which have suggested that age has a positive effect on independence.

Three country-level characteristics turned out to be most important in explaining variance. Country population, GDP per capita, and economic coordination turned out to be strongly statistically significant predictors of de facto independence. Thus, small countries' virtue is exhausted after they have established the rule of law: all that remains is a negative 'inside-the-Beltway' effect. Economic coordination again has the same effect found in previous research. Country-level characteristics explained most of the variance in de facto independence, with GDP per capita, rule of law, and economic coordination respectively explaining around 28, 26 and 25 percent of the explained variance.<sup>7</sup>

The substantive importance of these variables is different to their contribution to explaining variance. If we plot the effect on de facto independence of a change in one standard deviation of each variable (Figure 3), we can see that a one standard deviation change in de jure independence has a greater effect than a one standard deviation change in any other variable.

<sup>7</sup> Estimates calculated using the `relaimpo` package for R (Grömping, 2006)

The substantive importance of de jure independence becomes even more clear when we consider concrete examples of the changes in each variable that are necessary to secure a desired change in de facto independence. Returning to the comparison between the Greek and German financial markets regulators, suppose that we wished to make the Greek regulator as independent from politics as the German regulator. To achieve this change – a change of almost 2.25 units on our measure – how would our key variables need to change?

No single change in one variable can achieve an effect of this magnitude. In order to surpass the level of de facto independence shown by the BaFin, Greece would need to triple its income per head, become as law-abiding as Spain, and grant the Hellenic Capital Markets Commission the highest degree of de jure independence seen in our sample.

However, if the Greek government set a less demanding target, by trying to match the de facto independence of the Irish financial regulator (a change of approximately 0.27 units), the change could easily be accomplished by granting the regulator the highest degree of de jure independence seen in our sample; indeed this would overshoot the target somewhat. A change of similar magnitude could be achieved by adding \$8,000 to Greece's GDP per capita – but this change is much less easily achievable, for obvious reasons.

## 5 Conclusions

So far, we have shown that we can arrive at reasonable interval-level measures of the de facto independence of regulatory agencies, and that the independence of these agencies can be explained reasonably well by three main variables – the degree of de jure independence granted to the agency, the rule of law, and the coordination of the economy in that country. Two other controls – population and national product per capita – also have a positive effect, but contrary to our expectations, neither the age of the agency, nor the number of veto players in the polity, have any impact on the agency's independence.

Our findings on the effect sizes of each of these variables imply an optimistic view for institutional engineering. Changes in the de jure independence do have effects on the de facto independence of agencies, and these effects are not vitiated if the rule of law is only weakly established in a country. These findings indicate that link between de jure and de facto independence is closer than previous literature has suggested. The link is not so close as for supreme courts, but it is closer than previously-demonstrated links in central banking and public policy.

These findings can, of course, be contested, and we recognise that not all readers will be convinced by our use of proxies and by the assumptions that the effects of these variables are ever-present and monotonically increasing. Our data will improve over time, as institutions acquire a longer track-record which is a more reliable indicator of their degree of independence. At the

same time, we will in future work on improving our measurement. A key part of our previous article on independence was the use of latent trait models to model de jure independence: we hope to make a similar step forward with regard to the measurement of de facto independence. In this case, a single latent trait of de facto independence would be inferred from two different models: a duration model for executive tenure, and a event count model for government changes followed by changes at the regulator.

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Country	Sector	Name	Executive	Start	End
Austria	Financial markets	Finanzmarktaufsicht (FMA)	Helmut Ettl	2008-02-14	2010-03-10
Austria	Financial markets	Finanzmarktaufsicht (FMA)	Kurt Pribil	2001-10-22	2010-03-10
Austria	Financial markets	Finanzmarktaufsicht (FMA)	Heinrich Traumlüller	2005-02-14	2008-02-13
Austria	Financial markets	Finanzmarktaufsicht (FMA)	Andreas Grünbichler	2001-10-22	2004-10-22
Austria	Competition	Bundeswettbewerbsbehörde (BWB)	Theodor Thanner	2007-07-01	2010-03-10
Austria	Competition	Bundeswettbewerbsbehörde (BWB)	Walter Barfuß	2002-07-01	2007-07-01
Austria	Energy	Energie-Control GmbH	Walter Boltz	2001-03-01	2010-03-10
Austria	Telecoms	Rundfunk & Telekom Regulierungs GmbH	Georg Serentschy	2002-10-15	2010-03-10
Austria	Telecoms	Rundfunk & Telekom Regulierungs GmbH	Heinrich Otruba	1997-10-01	2002-10-15
Austria	Environment	Umweltbundesamt	Georg Rebernik	1999-03-01	2010-03-10
Belgium	Energy	Commissie voor de Regulering van de Elektriciteit en het Gas	François Possemiers	2007-01-15	2010-03-10
Belgium	Energy	Commissie voor de Regulering van de Elektriciteit en het Gas	Christine Vanderveeren	2000-01-10	2007-01-15
Belgium	Financial markets	Commissione Bancaire Financière et des Assurances	Jean-Paul Servais	2007-04-20	2010-03-10
Belgium	Financial markets	Commissione Bancaire Financière et des Assurances	Eddy Wymerssch	2001-04-01	2007-04-01
Belgium	Financial markets	Commissione Bancaire Financière et des Assurances	Jean-Louis Duplat	1989-01-17	2001-01-17
Belgium	Pharmaceuticals	Agence Fédérale des Médicaments et des Produits de Santé	Xavier De Cuyper	2007-05-01	2010-03-10
Belgium	Pharmaceuticals	Agence Fédérale des Médicaments et des Produits de Santé	Piet Vanthemische	2006-01-01	2007-05-01
Belgium	Food Safety	Agence fédérale pour la sécurité de la chaîne alimentaire	Houins, Gilbert	2006-06-23	2010-03-10
Belgium	Food Safety	Agence fédérale pour la sécurité de la chaîne alimentaire	Piet Vanthemische	2002-06-21	2006-06-23
Belgium	Food Safety	Agence fédérale pour la sécurité de la chaîne alimentaire	Luc Beernaert	2000-05-27	2002-02-06
Belgium	Telecoms	Belgisch Instituut voor Postdiensten en Telecommunicatie	Luc Hindryckx	2009-10-09	2010-03-10
Belgium	Telecoms	Belgisch Instituut voor Postdiensten en Telecommunicatie	Eric Van Heesvelde	1993-07-01	2009-10-09
Belgium	Competition	Raad voor de Mededinging	Stefaan Raes	2004-10-01	2010-03-10
Belgium	Competition	Raad voor de Mededinging	Béatrice Ponet	2001-07-17	2004-02-10
Belgium	Competition	Raad voor de Mededinging	Olivier Gutt	2000-01-12	2000-06-27
Belgium	Competition	Raad voor de Mededinging	Christine Schurmans	1993-04-28	2000-01-12
Denmark	Energy	Energitisynet	Uffe Bundgaard-Jørgensen	2004-01-01	2010-03-10
Denmark	Energy	Energitisynet	Hans Henrik Høgsbro Østergaard	2000-01-01	2004-01-01
Denmark	Financial markets	Finanstilsynet	Ulrik Nødgaard	2008-12-19	2010-03-10
Denmark	Financial markets	Finanstilsynet	Henrik Bjerre-Nielsen	1996-05-28	2008-12-19
Denmark	Financial markets	Finanstilsynet	Eigil Mølgaard	1983-08-01	1996-05-28
Denmark	Pharmaceuticals	Lægemiddelstyrelsen	Jytte Lyngvig	2000-08-01	2010-03-10
Denmark	Pharmaceuticals	Lægemiddelstyrelsen	Bo Lumholtz	1997-03-01	2000-08-01

Country	Sector	Name	Executive	Start	End
Denmark	Telecoms	IT- og telestyrelsen	Jørgen Abild Andersen	1991-01-01	2010-03-10
Denmark	Competition	Konkurrence-styrelsen	Agnete Gersing	2006-06-21	2010-03-10
Denmark	Competition	Konkurrence-styrelsen	Finn Lauritzen	1997-04-01	2006-06-21
Denmark	Environment	Miljøstyrelsen	Lars Hindkjær	2009-06-01	2010-03-10
Denmark	Environment	Miljøstyrelsen	Ole Christiansen	2003-08-21	2009-06-01
Denmark	Environment	Miljøstyrelsen	Steen Gade	1999-05-28	2003-06-12
Denmark	Environment	Miljøstyrelsen	Erik Lindegaard	1990-01-01	1999-05-28
Denmark	Environment	Miljøstyrelsen	Jens Kampmann	1978-01-01	1990-01-01
Denmark	Environment	Miljøstyrelsen	Ejler Koch	1977-01-01	1978-01-01
Denmark	Environment	Miljøstyrelsen	Helge Odel	1972-01-01	1977-01-01
Finland	Energy	Energiamarkkinavirasto	Asta Sihvonen-Punkka	1998-07-01	2010-03-10
Finland	Financial markets	Finanssivalvonta	Anneli Tuominen	2009-02-04	2010-03-10
Finland	Food Safety	Elintarviketurvallisuusvirasto	Jaana Husu-Kallio	2006-08-01	2010-03-10
Finland	Telecoms	Viestintävirasto	Rauni Hagman	2002-01-01	2010-03-10
Finland	Competition	Kilpailuvirasto	Juhani Jokinen	2005-01-01	2010-03-10
Finland	Competition	Kilpailuvirasto	Matti Purasjoki	1988-01-01	2005-01-01
France	Energy	Commission de régulation de l'énergie	Philippe de la Doucette	2006-05-18	2010-03-10
France	Energy	Commission de régulation de l'énergie	Jean Syrota	2000-03-29	2006-05-18
France	Financial markets	Autorité des marchés financiers (AMF)	Jean-Pierre Jouyet	2008-12-12	2010-03-10
France	Financial markets	Autorité des marchés financiers (AMF)	Michel Prada	2003-11-21	2008-12-12
France	Food Safety	Agence française de sécurité sanitaire des aliments	Marc Mortureux	2009-08-28	2010-03-10
France	Food Safety	Agence française de sécurité sanitaire des aliments	Pascale Briand	2005-07-15	2009-07-22
France	Food Safety	Agence française de sécurité sanitaire des aliments	Martin Hirsch	1999-04-01	2005-07-15
France	Pharmaceuticals	Agence française de sécurité sanitaire des produits de santé	Jean Marimbert	2004-02-18	2010-03-10
France	Pharmaceuticals	Agence française de sécurité sanitaire des produits de santé	Philippe Duneton	1999-03-11	2004-02-18
France	Telecoms	Autorité de Régulation des Communications Electroniques et des Postes	Jean-Ludovic Silicani	2009-05-08	2010-03-10
France	Telecoms	Autorité de Régulation des Communications Electroniques et des Postes	Jean-Claude Mallet	2009-01-04	2009-04-29
France	Telecoms	Autorité de Régulation des Communications Electroniques et des Postes	Paul Champsaur	2003-01-01	2009-01-01
France	Telecoms	Autorité de Régulation des Communications Electroniques et des Postes	Jean-Michel Hubert	1997-01-01	2003-01-01
France	Competition	Autorité de la concurrence	Bruno Lasserre	2004-07-27	2010-03-10
France	Competition	Conseil de la concurrence	Marie-Dominique Hagelsteen	1998-08-04	2004-07-27
France	Competition	Conseil de la concurrence	Charles Barbeau	1993-03-06	1998-01-01
France	Competition	Conseil de la concurrence	Pierre Laurent	1987-01-01	1993-01-01
France	Environment	Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)	Philippe van de Maele	2009-03-05	2010-03-10

Country	Sector	Name	Executive	Start	End
France	Environment	Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)	Chantal Jouanno	2008-02-08	2009-01-21
France	Environment	Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)	Michele Pappalardo	2003-01-15	2008-02-08
France	Environment	Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)	Pierre Radanne	1998-01-01	2002-12-31
France	Environment	Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)	Jacques Vernier	1992-03-01	1996-03-01
Germany	Financial markets	Bundesanstalt für Finanzdienstleistungsaufsicht	Jochen Sanio	2002-04-07	2010-03-10
Germany	Pharmaceuticals	Bundesinstituts für Arzneimittel und Medizinprodukte	Johannes Löwer	2007-12-01	2010-03-10
Germany	Pharmaceuticals	Bundesinstituts für Arzneimittel und Medizinprodukte	Reinhard Kurth	2004-09-01	2007-12-01
Germany	Pharmaceuticals	Bundesinstituts für Arzneimittel und Medizinprodukte	Harald G. Schweim	2000-08-07	2004-04-01
Germany	Pharmaceuticals	Bundesinstituts für Arzneimittel und Medizinprodukte	Alfred G. Hildebrandt	1994-07-01	2000-07-01
Germany	Telecoms	Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen	Matthias Kurth	2005-07-13	2010-03-10
Germany	Telecoms	Regulierungsbehörde für Telekommunikation und Post	Klaus-Dieter Scheurle	1998-01-01	2001-01-01
Germany	Competition	Bundeskartellamt	Andreas Mundt	2009-12-18	2010-03-10
Germany	Competition	Bundeskartellamt	Bernhard Heitzer	2007-04-01	2009-12-18
Germany	Competition	Bundeskartellamt	Ulf Böge	2000-01-13	2007-04-01
Germany	Competition	Bundeskartellamt	Dieter Wolf	1992-01-01	2007-01-13
Germany	Competition	Bundeskartellamt	Wolfgang Kartte	1976-01-01	1992-01-01
Germany	Competition	Bundeskartellamt	Eberhard Günther	1958-01-15	1976-01-01
Germany	Environment	Umweltbundesamt (UBA)	Jochen Flasbarth	2009-09-01	2010-03-10
Germany	Environment	Umweltbundesamt (UBA)	Andreas Trog	1995-08-01	2009-09-01
Germany	Environment	Umweltbundesamt (UBA)	Simos Simopoulos	2009-05-11	2010-03-10
Greece	Energy	RAE	Mihalis Karamanis	2007-01-01	2009-05-11
Greece	Energy	RAE	Anastassios Gabrielides	2009-06-01	2010-03-10
Greece	Financial markets	Hellenic Republic Capital Market Commission	Alexis Pilavios	2004-03-23	2009-05-31
Greece	Financial markets	Hellenic Republic Capital Market Commission	Stavros Thomadakis	1996-01-01	2009-05-31
Greece	Financial markets	Hellenic Republic Capital Market Commission	Ioannis Vlemmas	2005-04-01	2009-05-31
Greece	Food Safety	Food Safety	Nikos Katsaros	2004-04-14	2005-03-31
Greece	Telecoms	Hellenic Telecommunications and Post Commission (EETT)	Leonidas Kanellos	2009-09-01	2010-03-10
Greece	Telecoms	Hellenic Telecommunications and Post Commission (EETT)	Nikitas Alexandridis	2005-08-01	2009-08-01
Greece	Telecoms	Hellenic Telecommunications and Post Commission (EETT)	Emmanouil Giakoumakis	2000-06-01	2005-06-01
Greece	Competition	Hellenic Competition Authority	Dimitrios Kyritsakis	2009-01-01	2010-03-10
Greece	Competition	Hellenic Competition Authority	Spyros Zissimopoulos	2003-10-01	2009-01-01
Greece	Competition	Hellenic Competition Authority	Dimitris Tzouganatos	2000-06-01	2003-10-01
Ireland	Energy	Commission for Energy Regulation	Michael Tutty	2008-10-14	2010-03-10

Country	Sector	Name	Executive	Start	End
Ireland	Energy	Commission for Energy Regulation (as Commission for Electricity Regulation)	Tom Reeves	1999-03-01	2008-10-14
Ireland	Financial markets	Irish Financial Services Regulatory Authority	Matthew Elderfield	2009-10-20	2010-03-10
Ireland	Financial markets	Irish Financial Services Regulatory Authority	Patrick Neary	2006-02-01	2009-02-01
Ireland	Financial markets	Irish Financial Services Regulatory Authority	Liam O'Reilly	2003-01-01	2006-02-01
Ireland	Food Safety	Food Safety Authority of Ireland	Alan Reilly	2009-06-01	2010-03-10
Ireland	Food Safety	Food Safety Authority of Ireland	John O'Brien	2004-06-01	2009-06-01
Ireland	Food Safety	Food Safety Authority of Ireland	Ann Westby	2003-10-01	2003-12-22
Ireland	Food Safety	Food Safety Authority of Ireland	Patrick Wall	1997-12-06	
Ireland	Pharmaceuticals	Irish Medicines Board	Pat O'Mahony	2002-11-09	2010-03-10
Ireland	Pharmaceuticals	Irish Medicines Board	Frank Hallinan	1998-08-01	2002-11-09
Ireland	Pharmaceuticals	Irish Medicines Board	John Kelly	1995-01-01	1995-08-01
Ireland	Telecoms	Commission for Communications Regulation (ComReg)	Alex Chisholm	2009-12-01	2010-03-10
Ireland	Telecoms	Commission for Communications Regulation (ComReg)	Mike Byrne	2006-12-01	2008-12-01
Ireland	Telecoms	Commission for Communications Regulation (ComReg)	Isolde Goggin	2006-12-01	2008-12-01
Ireland	Telecoms	Commission for Communications Regulation (ComReg)	John Doherty	2003-12-01	2004-12-01
Ireland	Telecoms	Commission for Communications Regulation (ComReg)	Etain Doyle	1997-06-01	2004-02-01
Ireland	Competition	Irish Competition Authority	William Prasifka	2006-04-01	2010-04-01
Ireland	Competition	Irish Competition Authority	John Fingleton	2000-05-01	2005-10-01
Ireland	Competition	Irish Competition Authority	Patrick McNutt	1996-10-01	2000-01-01
Ireland	Competition	Irish Competition Authority	Paddy Lyons	1992-01-01	1996-01-01
Ireland	Environment	Environmental Protection Agency	Mary Kelly	2002-04-01	2010-03-10
Ireland	Environment	Environmental Protection Agency	Liam McCumiskey	1993-03-26	2002-04-01
Italy	Energy	Autorità per l'energia elettrica e il gas	Alessandro Ortis	2003-12-01	2010-03-10
Italy	Energy	Autorità per l'energia elettrica e il gas	Pippo Ranci	1996-12-01	2003-12-01
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Lamberto Cardia	2003-05-29	2010-03-10
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Luigi Spaventa	1998-05-16	2003-05-29
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Tommaso Padoa-Schioppa	1997-03-01	
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Enzo Berlanda	1992-01-28	
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Bruno Pazzi	1990-09-02	
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Franco Piga	1984-05-01	
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Vincenzo Milazzo	1982-01-01	
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Guido Rossi	1981-01-01	1982-08-10
Italy	Financial markets	Commissione Nazionale per le Società e la Borsa	Gastone Miconi	1976-01-01	

Country	Sector	Name	Executive	Start	End
Italy	Pharmaceuticals	Agenzia Italiana del Farmaco	Guido Rasi	2008-07-13	2010-03-10
Italy	Pharmaceuticals	Agenzia Italiana del Farmaco	Umberto Filibeck	2008-06-23	
Italy	Pharmaceuticals	Agenzia Italiana del Farmaco	Nello Martini	2004-01-01	2008-06-23
Italy	Telecoms	Autorità per le garanzie nelle comunicazioni	Corrado Calabrò	2005-05-09	2010-03-10
Italy	Telecoms	Autorità per le garanzie nelle comunicazioni	Enzo Cheli	1998-02-10	2005-05-09
Italy	Competition	Autorità Garante della Concorrenza e del Mercato	Antonio Catricalà	2005-03-01	2010-03-10
Italy	Competition	Autorità Garante della Concorrenza e del Mercato	Giuseppe Tesaurò	1998-01-01	1998-01-01
Italy	Competition	Autorità Garante della Concorrenza e del Mercato	Giuliano Amato	1994-11-09	1998-01-01
Italy	Competition	Autorità Garante della Concorrenza e del Mercato	Francesco Saja	1990-10-10	1994-07-31
Italy	Competition	Autorità Garante della Concorrenza e del Mercato	Vincenzo Grimaldi	2008-07-22	2010-03-10
Italy	Environment	Istituto superiore per la protezione e la ricerca ambientale (ISPRA)	Giancarlo Viglione	2006-10-26	2008-07-24
Italy	Environment	Agenzia per la protezione dell'ambiente e per i servizi tecnici (APAT)	Jean-Nicolas Schaus	1999-01-01	2010-03-10
Luxembourg	Financial markets	Commission de Surveillance du Secteur Financier	Paul Laplume	2005-08-19	2010-03-10
Luxembourg	Telecoms	Institut Luxembourgeois de Régulation (IRL)	Roger Mollitor	2000-01-01	2005-08-19
Luxembourg	Telecoms	Institut Luxembourgeois de Régulation (IRL)	Claude Frieseisen	1997-02-13	2005-01-01
Luxembourg	Telecoms	l'Institut Luxembourgeois des Télécommunications	Thierry Hoscheit	2004-10-29	2010-03-10
Luxembourg	Competition	Conseil de la Concurrence	Hans Hoogervorst	2007-09-15	2010-03-10
Netherlands	Financial markets	Autoriteit Financiële Markten (AFM)	Arthur Docters van Leeuwen	2002-03-01	2007-09-15
Netherlands	Financial markets	Autoriteit Financiële Markten (AFM)	Bert Leufkens	2007-08-01	2010-03-10
Netherlands	Pharmaceuticals	College ter Beoordeling van Geneesmiddelen (CBG)	Frits Lekkerkerker	1991-08-01	2007-08-01
Netherlands	Pharmaceuticals	College ter Beoordeling van Geneesmiddelen (CBG)	Chris A. Fonteijn	2005-09-01	2010-03-10
Netherlands	Telecoms	Onafhankelijke Post en Telecommunicatie Autoriteit	Jens Arnbak	1997-08-01	2005-09-01
Netherlands	Telecoms	Onafhankelijke Post en Telecommunicatie Autoriteit	Pieter Kalbfleisch	2003-09-22	2010-03-10
Netherlands	Competition	Nederlandse Mededingingsautoriteit (NMa)	Anne-Willem Kist	1998-01-01	2003-01-01
Netherlands	Competition	Nederlands Mededingingsautoriteit (NMa)	Marc Sprenger	2003-09-01	2010-03-10
Netherlands	Competition	Rijksinstituut voor Volksgezondheid en Milieu (RIVM)	Hans Pont	2000-11-10	2003-09-01
Netherlands	Competition	Rijksinstituut voor Volksgezondheid en Milieu (RIVM)	Ruud van Noort	1997-03-01	1999-09-13
Netherlands	Competition	Rijksinstituut voor Volksgezondheid en Milieu (RIVM)	Erling Diesen	1988-01-01	
Norway	Energy	Norges vassdrags- og energidirektorat	Sigmund Larsen	1976-01-01	1987-01-01
Norway	Energy	Norges vassdrags- og energidirektorat	Vidkunn Hveding	1968-01-01	1975-01-01
Norway	Energy	Norges vassdrags- og energidirektorat	Fredrik Vogt	1947-01-01	
Norway	Energy	Norges vassdrags- og energidirektorat	Halvard Roald	1960-01-01	
Norway	Financial markets	Finanstilsynet (formerly Kredittilsynet)	Bjørn Skogstad Aamo	1993-01-01	2010-03-10
Norway	Financial markets	Finanstilsynet (formerly Kredittilsynet)	Svein Aasmundstad	1987-06-01	1992-01-01

Country	Sector	Name	Executive	Start	End
Norway	Pharmaceuticals	Statens legemiddelverket	Gro R. Wesenberg	1999-09-06	2010-03-10
Norway	Telecoms	Post- og teletilsynet	Willy Jensen	2000-09-01	2010-03-10
Norway	Telecoms	Post- og teletilsynet	Roald Ekholdt	1991-01-01	2000-06-01
Norway	Competition	Konkurransetilsynet	Knut Eggum Johansen	1999-05-01	2010-03-10
Norway	Competition	Konkurransetilsynet	Einar Hope	1983-01-01	1999-05-01
Norway	Environment	Statens forurensningstilsyn (SFT)	Ellen Hambro	2007-01-01	2010-03-10
Norway	Environment	Statens forurensningstilsyn (SFT)	Håvard Holm	1996-05-01	2006-12-31
Norway	Environment	Statens forurensningstilsyn (SFT)	Harald Rensvik	1992-09-05	1995-12-31
Norway	Environment	Statens forurensningstilsyn (SFT)	Harald Rensvik	1990-11-17	1992-09-05
Norway	Environment	Statens forurensningstilsyn (SFT)	Harald Rensvik	1986-05-28	1990-11-16
Norway	Environment	Statens forurensningstilsyn (SFT)	Christian Hambro	1981-10-01	1986-05-11
Norway	Environment	Statens forurensningstilsyn (SFT)	Rolf Marstrand	1978-03-10	1981-09-30
Norway	Environment	Statens forurensningstilsyn (SFT)	Hans Chr. Bugge	1977-02-14	1978-02-28
Norway	Environment	Statens forurensningstilsyn (SFT)	Tor Holmøy	1974-06-01	1976-08-31
Norway	Environment	Statens forurensningstilsyn (SFT)	Vítor Santos	2006-12-29	2010-03-10
Portugal	Energy	Entidade Reguladora dos Serviços Energéticos	Jorge Vasconcelos	1997-01-01	2006-12-29
Portugal	Energy	Entidade Reguladora dos Serviços Energéticos	Carlos Tavares	2005-09-09	2010-03-10
Portugal	Financial markets	Comissão do Mercado de Valores Mobiliários	Fernando Teixeira dos Santos	2000-03-01	2005-07-21
Portugal	Financial markets	Comissão do Mercado de Valores Mobiliários	José Nunes Pereira	1996-01-01	2000-03-01
Portugal	Financial markets	Comissão do Mercado de Valores Mobiliários	Álvaro Cordeiro Dâmaso	1995-03-03	1995-03-03
Portugal	Financial markets	Comissão do Mercado de Valores Mobiliários	Fernando da Costa Lima	1992-01-01	2010-03-10
Portugal	Pharmaceuticals	INFARMED	Vasco de Jesus Maria	2005-07-15	2005-07-15
Portugal	Pharmaceuticals	INFARMED	Rui Santos Ivo	2002-07-12	2005-07-15
Portugal	Telecoms	Autoridade Nacional de Comunicações (ANACOM)	José Manuel Amado da Silva	2006-06-08	2010-03-10
Portugal	Telecoms	Autoridade Nacional de Comunicações (ANACOM)	Pedro Duarte Neves	2004-09-10	2006-06-08
Portugal	Telecoms	Autoridade Nacional de Comunicações (ANACOM)	Alvaro Dâmaso	2002-07-08	2004-07-23
Portugal	Telecoms	Autoridade Nacional de Comunicações (ANACOM)	Luis Nazaré	1998-07-01	2002-07-08
Portugal	Telecoms	Autoridade Nacional de Comunicações (ANACOM)	Fernando Mendes	1989-11-06	1998-07-01
Portugal	Competition	Autoridade da Concorrência (AdC)	Manuel Sousa Sebastião	2008-03-24	2010-03-10
Portugal	Competition	Autoridade da Concorrência (AdC)	Abel Mateus	2004-03-24	2008-03-24
Spain	Energy	Comisión Nacional de Energía	Maria Teresa Costa Campí	2005-06-01	2005-04-17
Spain	Energy	Comisión Nacional de Energía	Julio Segura Sanchez	1999-04-01	2010-03-10
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Manuel Conthe Gutiérrez	2007-05-05	2007-04-27
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Manuel Conthe Gutiérrez	2004-10-07	2007-04-27

Country	Sector	Name	Executive	Start	End
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Bias Calzada Terrados	2001-09-22	2004-10-06
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Pilar Valiente Calvo	2000-10-06	2001-09-21
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Juan Fernández-Armesto Fernández-España	1996-10-04	2000-10-05
Spain	Financial markets	Comisión Nacional del Mercado de Valores	Luis Carlos Croissier Batista	1988-10-01	1996-10-03
Spain	Telecoms	Comisión del Mercado de las Telecomunicaciones	Reinaldo Rodríguez Illera	2005-05-04	2010-03-10
Spain	Telecoms	Comisión del Mercado de las Telecomunicaciones	Carlos Bustelo García del Real	2003-01-10	2005-03-11
Spain	Telecoms	Comisión del Mercado de las Telecomunicaciones	José María Vázquez Quintana	1998-12-01	2003-11-01
Spain	Competition	Comisión Nacional de la Competencia	Luis Berenguer Fuster	2005-10-04	2010-10-04
Spain	Competition	Tribunal de Defensa de la Competencia	Gonzalo Solana	2000-01-01	2005-10-04
Spain	Competition	Tribunal de Defensa de la Competencia	Amadeo Petitbó	1995-01-01	2000-01-01
Spain	Competition	Tribunal de Defensa de la Competencia	Miguel Ángel Fernández Ordóñez	1992-01-01	1995-01-01
Sweden	Energy	Energimyndigheten	Tomas Käberger	2008-03-01	2010-03-10
Sweden	Energy	Energimyndigheten	Thomas Korsfeldt	1998-01-01	2008-03-01
Sweden	Financial markets	Finansinspektionen	Martin Andersson	2009-01-15	2009-01-15
Sweden	Financial markets	Finansinspektionen	Ingrid Bonde	2003-01-01	2009-01-01
Sweden	Financial markets	Finansinspektionen	Claes Norgren	1993-01-01	2002-11-01
Sweden	Financial markets	Finansinspektionen	Anders Sahlén	1991-01-01	1993-01-01
Sweden	Food Safety	Livsmedelsverket	Inger Andersson	2004-05-01	2010-03-10
Sweden	Food Safety	Livsmedelsverket	Bertil Norbelle	1999-01-01	2003-12-31
Sweden	Pharmaceuticals	Läkemedelsverket	Christina Rångemark Åkerman	2008-09-01	2010-03-10
Sweden	Pharmaceuticals	Läkemedelsverket	Gunnar Alvan	1997-08-01	2008-09-01
Sweden	Telecoms	Läkemedelsverket	Göran Marby	2010-01-01	2010-03-10
Sweden	Telecoms	Post- och telestyrelsen	Marianne Treschow	2004-06-01	2009-12-31
Sweden	Telecoms	Post- och telestyrelsen	Nils Gunnar Billinger	1998-04-01	2004-06-01
Sweden	Telecoms	Post- och telestyrelsen	Jan Freese	1994-03-01	1998-04-01
Sweden	Competition	Konkurrensverket	Dan Sjöblom	2009-03-16	2010-03-10
Sweden	Competition	Konkurrensverket	Claes Norgren	2003-01-01	2009-03-16
Sweden	Competition	Konkurrensverket	Ann-Christin Nykvist	1999-05-01	2002-12-31
Sweden	Competition	Konkurrensverket	Jörgen Holgersson	1992-01-01	1999-01-01
Sweden	Environment	Naturvårdsverket	Maria Ågren	2008-11-27	2010-03-10
Sweden	Environment	Naturvårdsverket	Lars-Erik Liljelund	1999-01-01	2008-07-01
Sweden	Environment	Naturvårdsverket	Rolf Amnerberg	1991-01-01	1999-01-01

Country	Sector	Name	Executive	Start	End
Sweden	Environment	Naturvårdsverket	Vafrid Paulsson	1967-01-01	1991-01-01
Switzerland	Energy	Office fédéral de l'énergie	Eduard Kiener	1977-01-01	2001-01-01
Switzerland	Financial markets	Financial Market Supervisory Authority (FinMA)	Patrick Raaflaub	2008-05-08	2010-03-10
Switzerland	Pharmaceuticals	Swissmedic	Jürg Schnetzer	2007-02-21	2010-03-10
Switzerland	Pharmaceuticals	Swissmedic	Franz Schneller	2002-01-01	2006-10-19
Switzerland	Telecoms	Commission fédérale de la communication (ComCom)	Marc Furrer	2005-01-01	2010-03-10
Switzerland	Telecoms	Commission fédérale de la communication (ComCom)	Fulvio Caccia	1998-09-29	2005-01-01
Switzerland	Competition	Competition Commission	Walter Stoffel	2003-01-01	2010-03-10
Switzerland	Competition	Competition Commission	Roland von Büren	1998-07-01	2002-12-31
Switzerland	Competition	Competition Commission	Pierre Tercier	1996-01-01	1998-07-01
United Kingdom	Energy	Office of Gas and Electricity Markets	Alastair Buchanan	2003-08-12	2010-03-10
United Kingdom	Energy	Office of Gas and Electricity Markets	Callum McCarthy	1998-09-15	2003-08-12
United Kingdom	Financial markets	Financial Services Authority	Hector Sants	2007-07-01	2010-03-10
United Kingdom	Financial markets	Financial Services Authority	John Tiner	2003-09-22	2007-07-20
United Kingdom	Financial markets	Financial Services Authority	Howard Davies	1997-08-01	2003-09-22
United Kingdom	Food Safety	Food Standards Agency	Tim Smith	2008-04-01	2010-03-10
United Kingdom	Food Safety	Food Standards Agency	John Harwood	2006-03-25	2008-04-01
United Kingdom	Food Safety	Food Standards Agency	Jon Bell	2003-05-08	2005-12-01
United Kingdom	Food Safety	Food Standards Agency	Geoffrey Podger	2000-05-01	2003-05-08
United Kingdom	Pharmaceuticals	Medicines and Healthcare Products Regulatory Agency	Kent Woods	2003-08-29	2010-03-10
United Kingdom	Pharmaceuticals	Medicines and Healthcare Products Regulatory Agency	Ed Richards	2006-10-05	2010-03-10
United Kingdom	Telecoms	Office of Communications	Stephen Carter	2003-03-01	2006-10-05
United Kingdom	Telecoms	Office of Communications	David Edmonds	1998-04-01	1998-03-31
United Kingdom	Telecoms	Office of Telecommunications	Don Cruickshank	1993-02-22	1998-03-31
United Kingdom	Telecoms	Office of Telecommunications	Sir Bryan Carsberg	1984-08-01	1992-06-30
United Kingdom	Telecoms	Office of Telecommunications	John Fingleton	2005-10-01	2010-03-10
United Kingdom	Competition	Office of Fair Trading	Sir John Vickers	2000-10-01	2005-09-30
United Kingdom	Competition	Office of Fair Trading	John Bridgeman	1995-10-01	2000-10-01
United Kingdom	Competition	Office of Fair Trading	Sir Bryan Carsberg	1992-07-01	1995-05-18
United Kingdom	Competition	Office of Fair Trading	Sir Gordon Borrie	1976-06-01	1992-07-01
United Kingdom	Competition	Office of Fair Trading	John Methven	1973-01-01	1976-06-01
United Kingdom	Environment	Environment Agency	Paul Leinster	2008-11-01	2010-03-10
United Kingdom	Environment	Environment Agency	Barbara Young	2000-09-01	2008-05-31
United Kingdom	Environment	Environment Agency	Ed Gallagher	1996-04-01	2000-09-01