1. Introduction

This paper presents an analysis of the relationship between the recent movement towards full consolidation in financial supervision and the institutional role of the central bank. We propose a path dependence approach to study the single-authority versus multi-authority dilemma, considering the level of financial supervision consolidation as the dependent variable. The work can be useful for evaluating the current worldwide situation, using a sample of 48 countries.

The starting point is the increasing integration of the banking, securities and insurance markets, as well as their products and instruments (blurring effect)[1]. The blurring effect produced the crisis of the traditional sectoral approach to supervision, denoting that a country's financial system is overseen on a sector – by – sector basis. The financial blurring process seems to call for unification of supervision (single financial authority, SFA).

The success of the SFA model seems to be growing, particularly in the European area. Among the 15 old members of the European Union, Austria (2002), Belgium (2004), Denmark (1988), Germany (2002), Sweden (1991), and the UK (1997) have chosen to delegate the supervision to a single authority, different from the central bank. The single supervisor has been adopted also in four new EU member countries – Estonia (1999), Hungary (2000), Latvia (1998), Malta (2002) – as well as in Norway (1986) and Iceland (1988). Outside Europe a unified agency was established in Kazakhstan (2004), Korea (1997), Japan (2001) and Nicaragua (1999) and, among the small countries, in Bahrain, Bermuda, Cayman Islands, Gibraltar, Maldives, Netherlands Antilles, Singapore and United Arab Emirates. On the other hand, in Ireland (2003) the supervisory responsibilities were concentrated in the hands of the central bank.

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[1] See, among others, European Commission (2002), De Luna Martinez and Rose (2003), Zwet (2003).

However, the picture would be incomplete without recognizing the counter-evidence. Masciandaro (2004) showed that the two most frequent supervisory models are polarized: on the one hand, countries with a high unification of powers display a low central bank involvement in supervision (*Single Financial Authority Regime*); on the other hand, countries with a low concentration of powers are characterized by high central bank supervisory responsibilities (*Central Bank Dominated Multiple Supervisors Regime*).

What drives financial supervision reform? Which is the central bank's role in this process? Masciandaro (2005) highlighted empirically the existence of a trade off between supervision unification and central bank involvement, the so-called central bank fragmentation effect, while Masciandaro (2006) discussed this effect using three different potential explanations: moral hazard effect, bureaucracy effect and reputation endowment effect. If a low central bank involvement is the *status quo*, the policymaker is not likely to increase it, to avoid moral hazard phenomena in the controlled intermediaries (moral hazard effect), or an increase in the bureaucratic powers of the central bank (bureaucracy effect). An increased unification level may be achieved by creating a new single financial authority.

If a high central bank involvement is the *status quo*, the policymaker may not wish to unify the supervision in the hands of the central bank for the same reasons (moral hazard and bureaucracy effects). At the same time, the policymaker may not be in a position to establish a new single financial authority, reducing the central bank involvement in supervision, if the central bank's reputation is high (reputation endowment effect).

In the paper, we go a little further and try to explain the reasons behind the central bank fragmentation effect and the corresponding effects. Parallel to the blurring effect in the financial markets, central banks all over the world have gained an increasing degree of independence from the political process. We identify legal proxies of two different potential causes, namely bureaucracy effect and reputation endowment effect, that could explain the

decision of the policymaker to maintain or reform the supervision responsibility of the monetary authority. We wish to test the hypothesis that, when supervision is assigned to central banks, the central banker enjoys a higher degree of bureaucratic power and/or reputation endowment owing to central bank independence. For this purpose we adopt monetary commitment and central bank independence indexes, using and elaborating the indicators discussed in Freytag (2001).

It is not surprising to discover that monetary legal indicators - and particularly the central bank independence - matter. In industrialised countries the relationship between independence and control over inflation seemed sufficiently robust and convincing; see the recent surveys in Berger et al. (2001) and Hayo and Hefeker (2002). Here we focus on the possible role of monetary legal indicators as institutional determinants of the choice of a financial supervisory structure. The policy implications are also relevant, particularly in the European Union context: Does the current existence of an independent European Central Bank affect the likelihood of the creation of a Single European Financial Supervisor?

The paper is organized as follows. Section two presents a path dependence approach to study the single authority versus multi-authority dilemma, considering the level of financial supervision consolidation as the dependent variable. The financial authorities concentration index (FAC Index) is used in section three to identify this dependent variable. In section three we highlight the importance of the role the central bank plays in the various national supervisory settings, using the fact that the degree of supervision unification seems to be inversely correlated with the central bank's involvement in supervision itself as a starting point. Section four discusses the possible explanation of this trade-off, stressing three potential causes: moral hazard effect, bureaucracy effect and reputation endowment effect. Section five introduces monetary commitment and central bank independence indicators as

consistent proxies of the reputation endowment effect and bureaucracy effect respectively. In section six, an econometric analysis is performed. Section seven puts forward some conclusions as well as perspectives for further research.

2. Explaining the Financial Supervision Regime: A Path Dependence Approach

Goodhart (2004) wondered if the development of financial supervision architecture is designed or accidental. It has been argued regularly and frequently that the design of supervision is essentially reactive, lagging behind innovation and evolving risks, and that the reasons for supervisory reforms are largely political. We claim that the evolution of financial supervision is not accidental. To justify this, we investigate the determinants that should lead a country to reform or to maintain the supervisory regime, with particular attention to the role of the central bank.

Our basis is that in each point of time, gains and losses of a supervisory model are expected variables, calculated by the policymakers that maintain or reform the supervisory regime. But the expectations of policymakers are likely to be influenced by structural economic and institutional variables, which may vary from country to country. Therefore, given the national economic and institutional endowment, these variables can determine, *ceteris paribus*, the policymaker's expected gains or losses of a specific supervisory regime. The supervisory regime can become the dependent variable in a *path dependence* framework. Furthermore, economic agents do not have perfect information on the true preferences of the policymaker: his/her optimal degree of supervision unification is a hidden variable.

The crucial issue is the identification of the policymaker's preferences. In the economic literature, there is lack of theoretical studies that consider the policymaker's objective function for the financial supervisory design. The first approach to identify the policymaker's

utility function could be the so-called narrative approach, in which official documents are interpreted to gauge the policymaker's choices. The narrative approach has been extensively used in the monetary policy literature: see Potts and Luckett (1978), Wallace and Warner (1985), Hakes (1988 and 1990), Romer and Romer (1989). This approach has the drawback that there is substantial room for differences between the policymaker's announcements and his/her true preferences.

The approach we intend to follow here is to consider the policymaker's actual choices in determining the level of financial supervision unification (factual approach). In each random point of time, we observe the policymaker's decision to maintain or reform the financial supervision architecture, choosing the level of unification. In other words we consider policymakers faced with discrete choices.

Building an empirical analysis consistent with this discrete choice process in a cross-country perspective involves claiming the existence of unobservable policymaker's utilities U_{ij}, where each U_{ij} is the utility received by the *ith* national policymaker from the *jth* level of financial unification. Since the utility U_{ij} is unobservable, we represent it as a random quantity, assuming that it is composed of a systematic part U and an random error term ε.

Furthermore, we claim that the utilities U_{ij} are a function of the attributes of the alternative institutional level of financial unification and of the structural characteristics of the policymaker's country.

Combining the two hypotheses, we have a random utility framework for the unobservable financial unification variable. As usual, we assume that the errors ε_{ij} are independent for each national policymaker and institutional alternative, as well as normally distributed. The independence assumption implies that the utility derived by one national policymaker is not related to the utility derived by any other national policymaker, and that the utility that a

policymaker derives from the choice of a given level of financial consolidation is not related to the utility provided by the other alternative. In the factual approach the first crucial issue is the measurement of the policymaker's choices, that is the definition of the dependent variable.

3. Financial Supervision Unification and Central Bank Involvement

The first problem when considering financial supervision concentration as a dependent variable, is to construct this variable. How can the degree of concentration of financial supervision powers be measured? To this end we use the financial authorities concentration index (FAC Index, Table 1B) proposed in Masciandaro (2004)[2]. The index has the maximum score (7) in countries where all the supervision responsibilities are in the hands of a single agency, this can be a new financial services authority – as in the UK or Germany – or the central bank – as in Ireland. Symmetrically, the index takes the minimum score (1) in countries with highly fragmentised supervisory regimes – as in the US or France.

But we should also consider the nature of the institutions involved in supervisory responsibilities, focusing on the distinction between the central bank and any other form of institution at least for two reasons.

First of all, any supervisory regime will have to provide a link between supervision and the central bank, given the potential relationship between monetary stability and financial stability. It has been pointed out correctly (Llewellyn 2005) that, irrespective of its role, the central bank is the ultimate authority for the systemic stability of the payment system. Thus, among the authorities that can have supervisory responsibility, the central bank has a special nature being the institution responsible for monetary policy. Furthermore, the special

[2] The construction of the index is described in Appendix 8.1.

characteristics of the role played by the central bank have placed it in a central position with respect to the political system, the intermediaries, and the other control authorities.

Secondly, in a movement towards full consolidation in supervision, one can think of two sharp alternatives: a monopolistic central bank or a pure single financial authority. In fact the policymaker can choose to delegate the management of monetary policy as well as financial supervision to the central bank. The second type of delegation separates the conduct of monetary policy from financial supervision, establishing a pure single financial authority.

The debate on the characteristics of this link is particularly important in the European Union, where monetary policy is separated from financial supervision; See Lannoo (2000), Padoa Schioppa (2003), Goodhart and Schoenmaker (1995), Eijffinger (2001), Vives (2001), Goodhart, Schoenmaker and Dasgupta (2002). Therefore we must ask which role the central bank plays in the various national supervisory regimes. We use the index of the central bank's involvement in financial supervision: the Central Bank as Financial Authority Index (CBFA, Table 1B) also proposed in Masciandaro (2004)[3].

Note that in evaluating the role of the central bank in banking supervision, we consider the fact that, whatever the supervision regime is, the monetary authority has responsibility in pursuing the macro financial stability. The central bank can be involved in banking supervision tasks in Single Authority regimes, too. For example in Germany the Deutsche Bundesbank participates in banking supervision, in subordination to the Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin)'s issues. The Oesterreichische Nationalbank co-operates with the Austrian Financial Market Authority continuing to conduct on-site inspection. The Estonian Bank has no role in supervision, but its President is a member of the Financial Authority Board, and two other members are chosen by the central bank. In the

[3] The construction of the index is described in Appendix 8.1.

other cases, the central bank remains involved in pursuing the overall financial stability. Therefore, we choose as rule of thumb the relative role of the central bank: we assign a greater value – if the central bank is the unique or the main responsible for banking supervision.

The analysis of the degree of financial supervision concentration and the level of central bank involvement provide a general picture of the supervisory regimes around the world. In fact, each national supervisory regime can be identified with at least two characteristics: the degree of concentration of powers (FAC Index) and the degree of involvement of the central bank in that distribution of powers (CBFA Index). From a theoretical point of view, given the two possible choices of the policymaker highlighted above, we can observe the relationship between the FAC Index and the CBFA Index. The worldwide comparative picture is quite interesting. The two most frequent models are polarized: on the one hand, countries with a high unification of powers show a low central bank involvement (*Single Financial Authority Regime*); on the other hand, in countries with a low concentration of powers, the central bank is highly involved (*Central Bank Dominated Multiple Supervisors Regime*).

The descriptive evidence of the two most frequent financial supervision regimes seems to correct the idea that, given the blurring process in the financial landscape, there are two possible kinds of supervisory approach: 1) unification under the roof of the central bank; and 2) unification in a different supervisory body. Actually the unification of supervision seems more evident in the case of Single Financial Authorities Regimes, while in the case of Central Bank-Dominated Multiple Supervisors Regimes the approach seems more consistent with a "leader-followers" framework. It is a matter of fact that in a multi-authority model the central bank tends to assume the position of "first among peers", at least for historical reasons. In other words, the descriptive analysis shows an interesting result: the national

choice on how many agencies must be involved in supervision is strictly linked to the role of the central bank. The degree of supervision unification seems to be inversely correlated with central bank involvement (central bank fragmentation effect).

4. Beyond the Central Bank Involvement in Supervision? The Role of Monetary Commitment and Central Bank Independence

How do we explain this fragmentation effect given by the involvement of the central bank in supervision?

We claimed that the central bank fragmentation effect can be explained as a special case of *rule-driven path dependence*. The concept of rule driven path dependence has been recently used in the corporate governance literature: see among others, Bebchuk and Roe (2000), Clark and Wojcik (2003). Rule-driven path dependence exists when, other conditions being equal, the choice of a given design of rules depends on characteristics already existing or already determined by the rules themselves.

In this case, a given policymaker's choice of supervision concentration level will depend on the role the central bank plays in the supervision, or that the policymaker has decided to have the central bank play. In other words, the policymaker's choice can be viewed as a sequential process in which the *institutional status quo* matters: the supervision concentration level is decided on the basis of the current position of the central bank. If the role of the central bank is limited, the supervision concentration level will probably be high and vice versa.

4.1 Low Central Bank Involvement in Supervision

Let us first consider the case where the central bank's involvement is low. The policymaker might raise the supervision concentration level by increasing the involvement of the central bank. The supervision concentration level and the central bank involvement would thus move in the same direction, but this does not seem to be the case. Why?

First of all, the policymaker may not wish to involve the central bank in supervisory responsibilities, as to avoid moral hazard phenomena in the controlled intermediaries (*moral hazard effect*). In addition, the regulatory office may be prone to regulatory capture. If a central bank is involved into banking supervision, capture may have significant negative effects on monetary policy (Heinemann and Schuler 2004). Or the policymaker may wish to avoid increasing the bureaucratic powers of the central bank, since it is already responsible for monetary policy (*bureaucracy effect*). Thus, in the case of a central bank not involved in supervision, the increased supervision concentration level may be achieved by creating a single financial authority.

Moreover, the policymaker may fear that the safety net – the central bank's function of lender of last resort – might spread to a wider set of institutions than just banks, if the central bank is also involved in supervising insurance and securities firms (*moral hazard effect*). Furthermore, in a country where the central bank is deeply involved in supervision, the policymakers might fear the creation of an overly powerful bureaucratic agency (*bureaucracy effect*). The policymaker may therefore not wish to increase the involvement of the central bank.

In the United Kingdom case, it has been stressed that, among all the arguments that led the Government in 1997 to establish the Financial Services Authority (FSA), removing supervision from the Bank of England could have been a *quid pro quo* for giving it monetary independence, on the grounds that a central bank with too many functions could be too much

of a power centre within the democratic system. In Norway, due to the banking crisis in the early 1990s, the possibility of merging the BISC with the central bank was considered by a committee appointed by the Ministry of Finance. But the Parliament, in order to avoid an excessive concentration of power, ruled that the BISC should continue as a separate and independent agency .

Austria adopted unified financial supervision in April 2002. In banking supervision, the existing powers of the Federal Ministry of Finance and in the Oesterreichische Nationalbank (OeNB) were combined under the Financial Market Authority (FMA). In Germany, the Federal Financial Services Supervisory Authority (BaFin) was established in May 2002 against the explicit preferences of the Bundesbank. BaFin replaced the three existing supervisory authorities for banking and financial services, insurance companies and securities trading.

The Danish Financial Supervisory Authority (DFSA) was established in 1988 through the merger of the Danish Banking Supervisory Authority and the Insurance Business Supervisory Authority. The Swedish Financial Supervisory Authority was established in 1991 through the merger of the former banking and insurance supervisory bodies (Bank Inspection Board and Private Insurance Supervisory Service, respectively). In Norway, the Banking, Insurance and Securities Commission (BISC) was established in 1986 though a merger of the Banking Inspectorate and the Insurance Council.

The Hungarian Financial Supervisory Authority was founded in April 2000 by merging four supervisory authorities: The State Banking Supervision, the State Securities Supervision, the State Supervision on Pension Funds and the State Supervision of Insurance Companies. In Japan the Financial Services Agency (FSA) was established in 1998, and before that the Ministry of Finance and the Bank of Japan were in charge of regulating the banking sector and all aspects of supervision were the sole responsibility of the Ministry of

Finance. In Belgium, the Banking, Finance and Credit Commission was created as a result of the Integration of the Insurance Supervisory Authority into the Banking and Financial Commission since 1 January 2004.

In all these cases, the central bank was not the main body responsible for banking supervision when supervisory reforms took place.

4.2 High Central Bank Involvement in Supervision

If, on the other hand, the central bank is heavily involved in supervision, the policymaker may increase the supervision concentration level in one of the two following ways: by increasing the powers of the central bank or by assigning them to a new single financial authority.

Ireland seems to be the typical case of an outlier. The first explanation is that the interests of the central bank captured the Government. In October 1998 the Irish government approved in principle the establishment of a single supervisory authority and also agreed to create an Implementation Advisory Group (IAG) to progress the necessary work. The IAG failed to reach a consensus; the Irish Central Bank, with its allies in the Department of Finance, wished to continue the central bank as the single supervisory agency; the banking sector strongly favoured the retention of the central bank as its supervisor. While the IAG report recommended that this single authority should be a new independent organization outside the central bank, a minority of the group members preferred to locate the new structure within a restructured central bank, by establishing a separate division or wing to undertake prudential and consumer protection functions. The subsequent government decision, in early 2001, was to link monetary policy and related functions with regulation of

financial services into a restructured central bank and to establish the Financial Services Authority of Ireland as an autonomous department within.

Alternatively, we could explain the exception noting that, *ceteris paribus*, the Irish central bank, as a member of the European System of Central Banks (ESCB), shares the monetary responsibilities and prerogatives with other central banks; in other words, the central bank of Ireland is not an autonomous national monetary authority. The monetary policy of the ESCB is governed by the decision-making bodies of the European Central Bank (ECB). The national central banks are an integral part of the ESCB and have to act in accordance with the guidelines and instructions of the ECB. Therefore, the expected risks of moral hazard effect and bureaucracy effect are likely to be smaller in the case of countries which are members of the ESCB. The decisions of the Irish Government could be explained without taking into account the capture theory.

At the same time, however, the policymaker may not be in a position to reduce the central bank's level of involvement in supervision, or may not regard it as advisable, especially if the policy of the central bank has been effective (*reputation endowment effect*).

In France, a reform was recently implemented, merging different financial supervision responsibilities into one regulatory authority – Autorité des Marchés Financiers (AMF) –, however, the Banque de France prerogatives remained unchanged. In 2004, after the Parmalat scandal, the Italian Government proposed a draft text of a bill, concerning a general reform of the supervisory architecture, based on the establishment of a single financial authority (Autorità per la Tutela del Risparmio). The text has not been approved by the appropriate Parliamentary Committee. The proposed reform encountered strong opposition from a bi-partisan coalition, defending the role of the Bank of Italy in promoting financial stability. The reform is still subject to discussion.

Finland has opted not to adopt the unified approach in financial supervision, in contrast to the other Scandinavian countries. It has been claimed that the Bank of Finland involvement in supervision has to be considered in explaining this choice. In Iceland, prior to the establishment of the single financial agency, banking supervision was conducted by the central bank. In 1996, a committee was set up by the Minister of Commerce, to look at prospects of moving towards unified supervision, given the increasing number of financial conglomerates. Only one member on the committee – the central bank official – voted against the introduction of unified financial supervision. However, the central bank obtained the ability to appoint one of the three members of the single financial authority board.

Since the policymaker has decided (or was unable to decide) neither to increase nor to reduce central bank involvement, he/she also decides not to increase the level of supervision concentration. In case the central bank is heavily involved in supervision, there is a tendency not to increase the level of supervision concentration.

On the contrary, if the reputation of the central bank is low, or decreasing, the establishment of a single financial authority could be more likely to occur, despite its high involvement in supervision. In the UK the Johnson-Matthey failure, the Bank of Credit and Commerce International case of 1991 and the Barings case of 1995 were interpreted by the public as being responsibilities of the Bank of England. The conduct of banking supervision had not enhanced the reputation of the central bank; each failure led to polemic debates, the establishment of a formal enquiry in two cases and, finally, a new banking supervision act, creating the FSA. In Sweden the creation of the single financial authority was prompted by the banking crisis that hit the country in 1990-1991.

The link between banking instability, central bank reputation failure and single financial authority establishment is also evident in the Baltic unified supervisory architectures and in

the case of Korea. Estonia experienced a severe banking crisis in 1998 and 1999. In May 2001, the Estonian Parliament adopted the Financial Supervisory Authority. Before the Act, the supervision was split into the three traditional sets of institutions (banking, securities and insurance). The Bank of Estonia was responsible for state supervision of banking. Latvia experienced banking and financial crises in 1995 and in 1998. In July 2001, the Financial and Capital Market Commission was established, as a consolidated institution replacing the Bank of Latvia as the credit institutions' supervisor, the Securities Market Commission, the Insurance Supervision Inspectorate. In Korea, until 1997, the central bank was responsible for banking supervision. Following the 1997 financial crisis, a presidential committee recommended a drastic overhaul of the organization of the central bank and the country's supervisory structure. As a result, the former four financial supervisory authorities were combined into one integrated financial supervisory body, the Financial Supervisory Committee.

Therefore, the degree of central bank involvement in supervision may influence the policymaker in his/her decision to alter the supervision concentration effect, according to an inverse relationship: the result may be the central bank fragmentation effect.

5. Overall Central Bank Institutional Setting

However, is it possible to separate the different causes that could explain the importance of the role that the central bank plays in supervision? In general, the three effects explaining the policymaker's path dependent behaviour can depend on the central banker's past behaviour or on the legal features. In other words, the relevance of the central bank involvement in supervision may hide the role of the central banker's past performances or the key aspects of the monetary institutional setting. The behavioural

aspect and the institutional aspect are both potentially important. Furthermore, the two aspects are likely to be complementary.

None of the three effects we distinguish is directly observable. Therefore, we use proxies. While the moral hazard effect can be called a purely economic concept, the other two are political economy by nature. Thus, in this paper we will concentrate on the legal aspect. Following again the rule-driven approach, we can try to identify the institutional rules – different from the central bank involvement – that could capture the explanations of the central bank fragmentation effect.

First of all, the central bank's institutional *status quo* in supervision matters if the monetary authority is characterized by a reputation endowment. The reputation of a central bank depends on the supervisory and monetary performance, on the one side, and on the overall institutional position, on the other side. Focusing on the legal rules, the central bank's overall institutional position depends on the features of the monetary regime. In accordance with the literature as discussed in Freytag (2001), we argue that the quality of a monetary regime is reflected by its degree of commitment to price stability. We distinguish two related concepts of commitment, which we call monetary commitment (MOC) and central bank independence (CBI). The coding and weighting is presented in Table 1A and commented in Appendix 8.2.

The index MOC is constructed using several factors, which can be grouped as follows: internal restrictions as set by central bank legislation, external constraints such as convertibility restriction, exchange rate arrangements and the like. For this purpose we propose the index of monetary commitment (MCO Index) (Table 1A), which modifies the indicator introduced in Freytag (2001), excluding the information on supervision rule. Hence: $O \leq MCO \leq 1$. If the index approaches zero, the level of commitment is very low.

The highest theoretically possible commitment is expressed by the value one. In other words: the higher MCO, the higher the potential overall reputation endowment of the central bank. The index is the weighted average of all the factors determining legal monetary commitment. These criteria are operationalised by using components with discrete outcomes having numerical coding between zero and one.

The central bank legislation rules are covering only the internal dimension of the degree of monetary commitment, identifying the specific position of the central banker inside the state organization. This is reflected in the measure of central bank independence. The concept of central bank independence can capture the bureaucratic position of the central bank vis a vis the government, as well as the Parliament. Focusing again on the role of the rules, the central bank independence can be used to evaluate the specific bureaucracy effect that determines the policymaker's attention on the role of the central bank in defining the supervision architecture. On this account we build up an index of central bank independence (CBI Index, Table 1A) being consistent with the measures of legal central bank independence, which are most influential on the literature, as the indices proposed in Grilli, Masciandaro and Tabellini (1991) and in Cukierman (1992). If the index approaches zero, the level of independence is very low. The highest theoretically possible independence is expressed by the value one. Hence: $O \leq CBI \leq 1$; the higher CBI, the higher the specific bureaucratic power of the central bank.

This leads us to the connection of sections five and six. We develop two competing hypotheses which both seem plausible.

- First, the level of monetary commitment can be useful to evaluate the legal dimension of the overall central bank reputation endowment. High reputation encourages

policymakers to give the central bank much authority in supervision. Thus, the higher MOC, the higher central bank involvement, the lower FAC.

- Second, the degree of central bank independence can be utilized to measure its specific legal bureaucratic power. If this power is high, the bank will be circumvented by the policymaker and not given a big role in financial authority. Therefore, the higher CBI, the lower the bank's involvement, the higher FAC.

Furthermore, in order to be rigorous we have to note that monetary commitment could be a proxy of both the reputation endowment effect and the bureaucracy effect; the same is true for the central bank independence (see the correlation index of 0.96 below). For these two reasons, we will use the two variables separately in the econometric analyses.

Summarizing, the institutional position of a central bank can be described using three different indicators: the degree of supervision involvement; the degree of monetary commitment; the degree of central bank independence. We note that on average the degree of supervision involvement is weakly and inversely correlated with the degree of monetary commitment (correlation index = - 0.16) and with the degree of independence (correlation index = - 0.14) while, not surprisingly, the degree of monetary commitment is strongly and directly correlated with the degree of independence (correlation index = 0.96) (Table 6). We have to remember that the concept of central bank independence is part of the broader definition of monetary commitment; in fact the CBI index is the aggregate of seven of the twelve components of the MOC index.

Note that in the econometric part we will use an index of central bank age (CBAGE Index) as alternative proxy of the reputation effect and/or the bureaucratic effect; the degree of central bank involvement is also weakly and inversely correlated with the central bank age (correlation index = -0.12).

6. Financial Supervision Unification, Monetary Commitment and Central Bank Independence

Each country has its degree of unification of powers with respect to financial supervision. The respective index reaches its maximum level in cases where there is a single authority and the minimum when there are more than three supervisors. The analysis conducted in the preceding pages claims that the degree of central bank involvement in supervision may condition the policymaker in his/her decision to alter the supervision concentration, according to an inverse relationship: the result is the central bank fragmentation effect.

How do we econometrically test the robustness of the fragmentation effect? How can we evaluate the possible role of the monetary commitment or the influence of the central bank independence? In order to assess these relationships, we can estimate a model of the probability of different regime decisions as a function of these variables, controlling for other structural variables.

The supervision regimes can be viewed as resulting from an unobserved variable: the optimal degree of financial supervision concentration, consistent with the policymaker utility. Each regime corresponds to a specific range of the optimal financial supervision concentration, with higher discrete FAC Index values corresponding to a higher range of financial concentration values. Since the FAC Index is a qualitative variable, the estimation of a model for such a dependent variable requires the use of a specific technique.

Our qualitative dependent variable can be classified into more than two categories, given that the FAC Index is a multinomial variable. But the FAC Index is also an ordinal variable, given that it reflects a ranking. Then the ordered probit and ordered logit models

are appropriate estimators, given the ordered nature of the policymaker's alternative; see Maddala (1983), Greene (1997), Wooldrige (2002).

Let *y* be the policymaker's ordered choices, taking the values (0,1,2,..,7). The ordered model for *y*, conditional on a set of *K* explanatory variables *x*, can be derived from a latent variable model (Equation 1). In order to test this relationship, let us assume that the unobserved variable vector, the optimal degree of financial supervision concentration y^*, is determined by:

$$y^* = \beta' x + \varepsilon \quad (1)$$

where ε is a random disturbance uncorrelated with the regressors, and β is a 1 x *K* regressors' vector.

The latent variable y^* is unobserved. What is observed is the choice of each national policymaker to maintain or to reform the financial supervisory architecture: this choice is summarized in the value of the FAC Index, which represents the threshold values. For our dependent variable there are seven threshold values. Estimation is carried out by means of maximum likelihood techniques, assuming that ε is normally distributed across country observations, and the mean and variance of ε are normalized. This model can be estimated with an ordered Probit model or with an ordered Logit model[4].

Which economic model can be tested? First of all, given the recent empirical analyses (Masciandaro 2005 and 2006), the choice of the optimal level of financial supervision concentration could depend on the role of the central bank in the supervision architecture.

[4] The Logit model differs from the Probit model only in the cumulative distribution function that is used to define choice probabilities. The maximum likelihood estimations were carried out by a packaged-ordered Probit and ordered Logit commands in STATA. To be complete we present both the Logit and the Probit results, given that, as usual, there is little basis for choosing between Probit and Logit models.

The expected sign of the relationship between central bank involvement and financial supervision consolidation is negative.

Secondly, we can control for the potential role of the monetary commitment and the influence of the central bank independence. In fact, the central bank involvement variable may hide the role of the overall monetary commitment, that enforces the general reputation endowment of the central bank, or the influence of the central bank's degree of independence, that strengthened its bureaucratic power. Therefore, both monetary institutional variables can capture the following effect: does monetary commitment and/or central bank independence matter in defining the level of financial supervision consolidation, instead of the central bank involvement in supervision? The expected sign of the two relationships is negative.

How can other control variables be chosen? Following Masciandaro (2005, 2006) we shall test the more general hypotheses:

First, the policymaker chooses to maintain or reform the degree of supervisory concentration in response to the structure of the financial system. In the modern debate on financial structure, it is usual to compare the equity dominance model (or *market-based regime*) with the bank dominance model (or *bank-based regime*). Furthermore, recent literature pointed out the close relationship between the financial structure model and the corporate governance model in every country, with particular attention to the relative political determinants; see Pagano and Volpin (2000), Perotti and Von Thadden (2003). Therefore, the control variables must capture the following effect: does the financial structure model (*financial factor*) matter in defining the policymaker's choices in the area of supervisory consolidation?

The expected sign of the relationship between the degree of supervision unification and the financial factor is undetermined (i.e. it can be either positive or negative). In section two we stressed the importance of the blurring process for banking and financial markets worldwide. In a bank-based regime, if we think that the policymakers' choices depend on the features of their own regime, we can suppose a positive relationship between the kind of regime and the degree of financial supervision consolidation, exactly in face of the financial conglomerates effect. The rationale for the creation of a single financial supervisory authority is the blurring of confines between banks, insurers and financial service providers. The increasing importance of financial conglomerates requires the unification of supervisory functions. At the same time, however, the blurring effect also means potential changes in the nature and dimensions of the financial markets (*the securitisation effect*). Therefore, in a market-based regime we can also expect a positive relationship between the kind of regime and the degree of financial supervision consolidation, this time in the face of the securitisation effect. Therefore the relationship between the financial factor and the degree of supervision concentration remains an empirical question.

Second, the political and institutional environment can determine the ability of the policymakers to implement their choices. Furthermore, we pointed out that the financial structure itself could be influenced by political factors. Then the control variables must capture a possible second relevant effect: does the quality of public governance (*political factor*) matter in defining the policymaker's choices on the level of supervisory concentration? The expected sign of the relationship between the degree of supervision unification and the political factor is also undetermined. In section two we noted that, whatever the financial regime of his/her country, a policymaker may choose a higher

degree of supervision in order to improve the capacity to face the challenges of the blurring process. Then we can suppose a positive relationship between good governance indicators and supervision unification. But a policymaker may prefer a single authority in order to increase the probability of capturing the financial supervisory structure. Therefore, at the same time we might expect a positive relationship between bad governance indicators and supervision consolidation. Again, the relationship between the political factor and the degree of supervision concentration remains an empirical question.

However, we must note that the relationship between the degree of supervision consolidation and the characteristics of the banking and financial markets might "obscure" the importance of other variables, which are themselves determinants in explaining the characteristics of the banking and financial markets; for example, in Demirgüç-Kunt, Laeven and Levine (2003) regulation becomes non-significant in explaining banking performance when checking for institutional indicators. Recently, the structure of financial markets was explained with three different institutional approaches (*legal factors*): the "legal approach" - La Porta et al. (1998) - the "economic approach" - Rajan and Zingales (2000) - the "political economy approach" - Pagano and Volpin (2000), Perotti and von Thadden (2003). Then we have to include control variables related to the legal-financial view and the endowment view, while the political-financial view was already represented by the indicator of governance.

Finally, as the above descriptive analysis pointed out, the concentration of powers seems more peculiar of developed countries, particularly in the European context. Moreover, we asked ourselves whether the choices of policymakers to increase the degree of consolidation of supervisory powers might depend on the level of development in their respective countries (*economic factor*). Furthermore, the *geographical factor* might also be

important, in terms of location in Europe. Then we could expect a positive relationship between European location and OECD membership, as well as the levels of economic growth, on one hand, and financial supervision concentration, on the other.

The general specification is represented by equation (2):

$$
\begin{aligned}
(FAC)_{\mathrm{i}} = {} & \beta_1 (CBFA)_{\mathrm{i}} + \beta_2 (MCB) + \beta_3 (CBFAMCB) + \beta_4 (MvB)_{\mathrm{i}} \\
& + \beta_5 (mcap)_{\mathrm{i}} + \beta_6 (goodgov)_{\mathrm{i}} + \beta_7 (gdp) + \beta_8 (OECD) \\
& + \beta_9 (Europe) + \beta_{10} (AnglosaxonL) + \beta_{10} (FrenchL) + \beta_{11} (GermanScandL) + \\
& \beta_{12} (Latitude) + \varepsilon_t
\end{aligned}
$$

with country $i = 1 \ldots 48$.

The independent variables are the following[5]:

1. CBFA Index is the index of involvement of the central bank in supervision, defined in section four;

2. MCB Index is a monetary institutional variable: we use first the MOC Index (monetary commitment), then the CBI Index (central bank independence); both variables were defined in section five;

3. CBFAMCB factor is the composite effect of CBFA Index and MCB Index;

4. MvB Index = Market vs Bank Index: binary variable for the private governance factor. It is a dummy that expresses the financial system of a given country, market-based (1) versus bank-based[6] (0);

5. mcap = Market capitalization/GDP: quantitative variable for the private governance factor. It shows a measure of the securities market size, relative to GDP[7];

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5 The correlation matrix for the variables is in Table 2.

6 The index is calculated using different banking and financial variables: see Demigüç-Kunt and Levine (1999). For each variable we calculate the mean of four time values: 1996, 1998, 2000, 2002.

7 World Bank, 2003, *World Development Indicators*, Stock Markets 5.3. For each variable we calculate the mean of four time values: 1996, 1998, 2000, 2002. Note that the correlation index between the financial

6. goodgov = Good Governance: quantitative variable for the public governance factor. It shows the structural capacity of the government to formulate and implement sound policies. Furthermore the index can represent the control variable for the politics and finance view[8];

6. gdp = Gross Domestic Product: quantitative variable for the economic size factor[9];

7. OECD = binary variable for the economic factor. It is a dummy that signals whether a given country is a member of the OECD (1) or not (0);

8. Europe = binary variable for the geographical factor. It is a dummy that signals whether a given country is European (1) or not (0);

9-11. AnglosaxonL, FrenchL, GermanScandL = binary variables for the law factor. They are dummies that indicate the legal root of a given country, representing the control variables for the law and finance view[10];

12. **Latitude** = quantitative variable for the endowment view. The variable is calculated as the absolute value of the latitude of the country, scaled to take values between 0 and 1 [11].

In the multinomial ordered models the impact of a change in an explanatory variable on the estimated probabilities of the highest and lowest of the order classifications - in our case the Single Authority model and the "pure" Multi-supervisory model - is unequivocal: if β_j is

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regime variable (MvB) and the market capitalization variable (mcap) is high, but their influence on the dependent variable is very low.

8 The index is built using all the indicators proposed by Kaufmann, Kraay and Mastruzzi (2003). They define (public) governance as the exercise of authority through formal and informal traditions and institutions for the common good, thus encompassing: 1) the process of selecting, monitoring and replacing governments; 2) the capacity to formulate and implement sound policies and deliver public services; 3) the respect of citizens and the state for the institutions that govern economic and social interactions among them. Furthermore, for measurement and analysis purposes, these three dimensions of governance can be further unbundled to comprise two measurable concepts per each of the dimensions above for a total of six components: 1) voice and external accountability; 2) political stability and lack of violence; 3) government effectiveness; 4) lack of regulatory burden; 5) rule of law; 6) control of corruption. The authors present a set of estimates of these six dimensions of governance for four time periods: 1996, 1998, 2000,2002. For every country, therefore, we first calculate the mean of the four time values for each dimension of governance; then we build up an index of global good governance in the period 1996-2002, calculating the mean of the six different dimensions.

9 World Bank, 2003, *World Development Indicators*. For each variable we calculate the mean of four time values: 1996, 1998, 2000, 2002.

10 Beck, Demirgüç-Kunt and Levine (2001). The legal roots are five: Anglo-Saxon Law (=Common Law), French, German and Scandinavian Laws (=Civil Laws), Socialist Law (Others) ; we skip one root – choosing the Socialist Laws, as the least significant from an economic point of view – to avoid multicollinearity problems.

11 La Porta et al. (1999). On the endowment view, also see Beck, Demirgüç-Kunt and Levine (2001).

positive, for example, an increase in the value of *xj* increases the probability of having the Single Authority model, while it decreases the probability of having the "pure" Multi-supervisory model.

Tables 2 and 3 show the Logit and Probit estimates of the general specification, using the sample of 48 countries[12]. The result of all the estimates confirm the robustness of the role of the central bank involvement, and also the monetary commitment (Table 2) and the central bank independence (Table 3) are inversely related to the supervision consolidation. The monetary institutional indexes do not substitute the central bank involvement effect, but they also influence the supervision unification. Therefore, both the central bank's role as supervisor and its monetary legal status matter in explaining the supervisory architectures. However the two factors – central bank involvement and central bank monetary status – are independent; the composite factor is never significant (Table 2 and 3).

Another possible proxy of the reputation endowment effect and/or the bureaucracy effect could be the age of the central bank. We employ an index of central bank age (CBAGE Index) utilizing the information provided on the central bank web sites. For each central bank the value of the index is simply equal to the years between the central bank establishment and today. If a relationship between age and reputation and/or bureaucratic power holds, the higher CBAGE Index, the higher the reputation endowment and/or the specific bureaucratic power of the central bank.

Table 4 shows the Logit and Probit estimates of the general specification with the new variable – CBAGE Index – using the same sample. The central bank age does not matter: the

[12] The country sample depends on the availability of institutional data. Given the 267 world countries (UN members are 180), our 48 countries represent 54 percent of world GDP and 30 percent of the world population.

probability of a more consolidated supervision is not linked with the age of the monetary authorities.

Finally, it is crucial to test the robustness of the hypothesis that the central bank involvement can be considered an independent variable, rejecting any reverse causality. In other words, we had to reject the hypothesis that central bank involvement is endogenous, i.e. that the policymaker jointly determines the financial supervision level and the central bank involvement, based on the same explicative model. We then considered central bank involvement as dependant variable (Table 5). Our conclusion is that the variables that could explain the degree of central bank involvement in financial supervision do not coincide with those that we use to analyse the degree of consolidation. In fact, if one performs Logit and Probit regressions using CBFA as dependent variable and the same vector of financial and institutional variables, the results are not significant at all.

Furthermore, to test the robustness of the institutional factor, we tried changing the index of central bank involvement, making it perfectly symmetrical with the index of financial supervision level[13] (Table 6). As expected, all the results are confirmed.

Finally, looking at the control variables, the probability that a country will move towards a Single Authority model is higher: 1) the smaller the overall size of the economy; 2) the higher the goodness of public governance; 3) when the jurisdiction adopt the Civil Law, particularly if the legal framework is characterized by German and Scandinavian roots[14].

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[13] The different levels of central bank involvement can be measured using the identical scale of the FAC Index (labelled CBFA Two Index): 1 = the central bank has responsibility in no sector; 3 = the central bank has responsibility in one sector; 5 = the central bank has responsibility in two sectors; 7 = the central bank has responsibility in all three sectors.

[14] We contrast the empirical results of Masciandaro (2005), who claimed that - given a different sample of countries (68) – also the financial variables are significant. In Masciandaro (2006) – with a data set of 89

First of all, the choice of the degree of supervisory unification is influenced by the dimension of the economic systems. More specifically, the lower the overall economic size, the more likely it seems that the probability of consolidation will increase, confirming the hypothesis of policymakers conditioned by the "small country" situation[15]. The small country effect captures the fact that with relatively few people the expertise in financial supervision is likely to be in short supply, and then this expertise might be more effectively utilized if it is concentrated with a single financial agency.

Secondly, the legal factor matters. This law effect is puzzling. The law and finance literature claims the existence of a strong relationship between market oriented financial systems and the British law jurisdictions. Here, we do not find that financial supervision unification is directly correlated with a market-based regime, while a link exists with the Civil Law root, in particular with the German and Scandinavian legal systems. This suggests a sort of "legal neighbour" effect.

Thirdly, the choice of policymakers to establish the concentration of supervisory powers could be facilitated by an institutional environment characterized by good governance. The relationship between good governance and the supervision concentration process can be explained, if we suppose that a policymaker who cares about soundness and efficiency would prefer the single financial authority as the optimal one in the face of the blurring challenges.

7. Conclusions

countries – the good governance coefficient is weakly significant. Therefore, the financial and political factors seem to be sample sensitive explanatory variables.

[15] It has been noted that the small country effect holds. Notwithstanding, we do not include in our sample the eight very small countries (Bahrain, Bermuda, Cayman Islands, Gibraltar, Maldives, Netherlands Antilles, Singapore and United Arab Emirates) that introduce the unified financial authorities.

Prior to the present study has there been an attempt to analyse the role of central bank monetary regime features in influencing the financial supervision unification. The approach was to consider the supervisory structure with one or more authorities as dependent variable. Looking for common determinants in the decision each country takes to maintain or reform its supervisory architecture, the empirical analysis highlights that the level of financial supervision consolidation depends on the central bank involvement in supervision, while the effect of the monetary institutional factors – monetary commitment and central bank independence - seem negligible.

In this respect, the establishment of a single financial authority can be consistent with the presence of an independent central bank. On the contrary, in an institutional setting characterized by a central bank deeply involved in supervision, a multi-authorities model seems to be likely to occur. From a European perspective, this results in the following prediction: the more the European Central Bank will be involved in the financial supervision architecture, the less likely the establishment of a European Single Financial Authority will be.

The overall results are particularly interesting for future research developments, bearing the hope that it increases the availability of institutional information, to expand the sample of countries that can be analysed. It will be important to pursue a deeper analysis of the determinants of the central bank fragmentation effect. In this paper the central bank fragmentation effect is an independent variable in explaining the supervision unification level. A further step in this field of research will be to consider the degree of central bank involvement as a dependent variable, in order to identify consistent proxies of the potential different causes (moral hazard effect, bureaucracy effect, reputation endowment effect)

linked to the past performance of the central bankers in the monetary and/or supervisory fields.

From the theoretical point of view, the future effort will be to model the policymaker's decision framework, in order to better capture the features of the institutional and political process that lead a supervisory regime to assume given characteristics. Using the principal agent approach for addressing the architecture of financial supervision, this seems a very promising avenue.

Finally, it will be important to conduct empirical studies aimed at investigating the success of different supervisory regimes, estimating the effects the alternative models have on key economic variables. Actually such a research immediately is confronted with at least two orders of difficulty.

First of all, the issue of the optimal degree of concentration of financial supervisory powers has emerged only recently, with the reforms adopted in various countries, so considering the type of supervisory regime as an explicative or exogenous (though not unique) variable of any other economic phenomenon means undertaking an analysis of extremely short historical series, with all the related problems of interpretation.

Secondly, completely and satisfactorily identifying what the key economic variables are, and the most probable object of an estimate, on which a supervisory structure makes its effect felt, is not a simple problem. Alternative supervisory structures may, for example, affect the level of efficiency of the public resources invested in monitoring the financial markets. Indicators can be found for the efficiency phenomenon, and empirical analysis can therefore proceed.

The point is that alternative structures may also (perhaps especially) affect other variables that are important but less easily expressed in concise indicators. Examples are stability,

reputation risk, or confident benefits, or the risk the authority will be captured by the policymakers or by the controlled intermediaries. Thus, a complete quantitative search for the effects of alternative supervisory structures is now probably premature, but it could be implemented in the future.

8. Appendix

8.1 Defining the Degree of Unification in Financial Supervision and the Central Bank Involvement

The creation of the FAC Index is based on an analysis of which and how many authorities in 48 countries are empowered to supervise the three traditional sectors of financial activity: banking, securities markets, insurance. To transform the qualitative information into quantitative indicators, we assigned a numerical value to each type of authority, in order to highlight the number of the agencies involved. The rationale with which we assigned the values considers simply the concept of unification of supervisory powers: the greater the unification, the higher the index value. The index is built on the following scale: 7 = Single authority for all three sectors (total number of supervisors=1); 5 = Single authority for the banking sector and securities markets (total number of supervisors=2); 3 = Single authority for the insurance sector and the securities markets, or for the insurance sector and the banking sector (total number of supervisors=2) 1 = Independent specialized authority for each sector (total number of supervisors=3).

We assign a value of 3 to the single supervisor for the banking sector and securities markets because of the predominant importance of banking intermediation and securities markets over insurance in every national financial industry. It also interesting to note that, in the group of integrated supervisory agencies countries, it seems to be a higher degree of integration between banking and securities supervision than between banking and insurance supervision; therefore, the degree of concentration of powers is, ceteris paribus, greater.

These observations do not, however, weigh another qualitative characteristic: there are countries in which one sector is supervised by more than one authority. It is likely that the degree of concentration rises when two authorities exist in a given sector, and one of

which has other powers in a second sector. On the other hand, the degree of concentration falls when there are two authorities in a given sector, neither of which has other powers in a second sector. It would therefore seem advisable to include these aspects in evaluating the various national supervisory structures by modifying the index as follows: adding 1 if in the country there is at least one sector with two authorities, and one of these authorities is also responsible for at least one other sector; subtracting 1 if in the country there is at least one sector with two authorities assigned to supervision, but none of these authorities has responsibility for another sector; 0 elsewhere.

Furthermore, we should consider the nature of the institutions involved in supervisory responsibilities. We propose the index of the central bank's involvement in financial supervision: the Central Bank as Financial Authority Index (CBFA). For each country, and given the three traditional financial sectors (banking, securities and insurance) the CBFA index is equal to: 1 = the central bank has not the main responsibility in banking supervision; 2 = the central bank has the responsibility in banking supervision; 3 = the central bank has responsibility in two sectors; 4 = the central bank has responsibility in all three sectors.

8.2 Defining the Degree Monetary Commitment and Central Bank Independence

To define the monetary commitment and the central bank independence, one should be as comprehensive as possible. In the following, we describe 9 criteria (consisting of 12 components) proposed in Freytag (2001) that theoretically determine the institutional position of the central bank. The first 6 criteria (8 components, indicated with a asterisk in Table 1A) are used to build up the index of independence, while the overall set of components are utilized for the monetary commitment index.

1) *Stated objectives of monetary policy.* A clear definition of the objective of monetary

policy in the legal foundation of monetary regime, namely price stability, makes it easier for the central bank to refuse demands to combat unemployment or to finance public spendings via money growth. Thus, commitment varies with the kind and number of legally prescribed objectives (component *obj).*.

2) *Locus of legal commitment.* The commitment to stability has to be put into a legal framework. This legal framework can be fixed on different constitutional levels. The more difficult a change of the regime is for the government, the higher is the commitment (component *const).*

3) *Discretionary power belonging to the government.* The more the government keeps control over instruments such as exchange rates, interest rates, open market policy and so on, the less it commits to stability (component *gov).*

4) *Conditions of appointment and dismissal of monetary policymakers.* First, the question is who is able to become chief executive officer (CEO), especially whether only a reputed expert or any other person can be appointed (component *ceo).* Second, how is a potential dismissal organised (component *diss)?*

5) *Conditions of lending to the government.* An important factor determining the level of legal commitments is a provision on lending fresh money to the government (component *limcred).* Even central bank holding of government bonds purchased on the secondary market (component *limsec)* has fiscal effects as long as the seigniorage is added to public revenues. Thus, the level of commitment is the lower, the easier it is for the government to borrow money from the monetary institution.

6) *Accountability* o*f the central bank.* The level of commitment is higher, the better the public is informed about monetary policy (component *acc).*

7) *Public pledges of the government.* External obligations raise the level of commitment (component *extern)* compared with a situation without these obligations.

8) *Convertibility restrictions.* The level of commitment is positively correlated with the degree of convertibility (component *conv).* We distinguish full convertibility of all transactions, restricted convertibility for either capital or current account transactions or no convertibility at all. A second component *(mult)* shows whether or not the market for foreign exchange is unified. If it is, commitment in this respect is high.

9) *Interactions with other currencies.* Monetary competition exerts competitive pressure on the domestic monetary authorities to issue a sound currency. The permission of monetary competition raises the level of commitment to stability (component *comp).*

8.3 Sources

For all the countries we use the official documents and web sites of the central banks and the other financial authorities. The information is updated until 2004. See also Cukiermann 1992, Cukierman, Miller and Neyapti 2002, Freytag 2001.

Table 1A: MOC Index and CBI Index: Codings

Criterion	Com-ponent	Explanation	Numerical codings
Stated objectives of monetary policy	*obj** (0.1)	1. Price stability only goal	1.00
		2. Other objectives mentioned	0.66
		3. Other objectives equally important	0.33
		4. No goals for monetary policy	0.00
Locus of legal commitment	*const** (0.1)	1. Constitution	1.00
		2. Central bank law	0.66
		3. Decree	0.33
		4. Not fixed at all	0.00
Discretionary power belonging to the government	*gov** (0.1)	1. No power left to the government	1.00
		2. Exchange rate only issue to be consulted between government and monetary authority	0.66
		3. Exchange rate regime completely left to government	0.33
		4. Government may override central bank as regards monetary policy	0.00
Conditions of appoint-ment and dismissal of monetary CEO	*ceo** (0.05)	1. CEO must be a reputed expert	1.00
		2. No expertise demanded	0.00
	*diss** (0.05)	1. Appointment with fixed term and dismissal only after criminal offenses and bad performance	1.00
		2. No rules for dismissal	0.50
		3. Dismissal unconditioned or linked to resignation of governments and ministers	0.00
Conditions of lending to the government	*limcred** (0.2)	1. No central bank credit allowed	1.00
		2. Central bank credit allowed conditionally	0.50
		3. Central bank credit allowed unconditionally	0.00
	*limprim** (0.1)	1. Central bank is not allowed to purchase public bonds on the primary market	1.00
		2. Central bank is allowed to purchase public bonds in hard currency on the primary market	0.66
		3. Central bank is allowed to purchase public bonds in any currency on the primary market	0.33
		4. No limitations on credit activities	0.00

(cont.)

Accountability of the central bank	*acc** (0)	1. Obligation to inform the public 2. Obligation to inform the parliament in public hearings 3 Obligation to inform the government without publicity 4. No accountability	1.00 0.66 0.33 0.00
External pledges of the government	*extern* (0.1)	1. Exchange rate fixed to a hard currency and money base fully backed with foreign reserves 2. Exchange rate fixed 3. Crawling peg 4. Managed floating 5. Free floating	1.00 0.75 0.50 0.25 0.00
Convertibility restrictions	*conv* (0.1)	1. Full convertibility 2. Partial convertibility 3. Convertibility for current account transactions only 4. Convertibility for capital account transactions only 5. No convertibility	1.00 0.75 0.50 0.25 0.00
	mult (0.05	1. One exchange rate 2. Multiple exchange rate	1.00 0.00
Interactions with other currencies	*comp* (0.05)	1. A hard currency can be used for all transactions 2. A hard currency can be used for some transactions, others excluded 3. A hard currency may be held 4. No holdings or transactions in Hard currencies allowed	1.00 0.66 0.33 0.00

The numbers in parenthesis show the weights for the MOC index used in section six.

Source: Freytag (2001, p. 198-199), own changes.

Table 1B: Supervisory Authorities in 48 countries

	Countries	Banking Sector (b)	Securities Sector (s)	Insurance Sector (i)	Rating	Weight	FAC INDEX	CBFA INDEX
1	Argentina	CB	S	I	1	0	1	2
2	Australia	BI,S	BI,S	BI,S	5	1	6	1

3	Austria	U, CB	U	U	7	-1	6	1
4	Belgium	U	U	U	7	0	7	1
5	Bolivia	B	SI	SI	3	0	3	1
6	Bosnia	CB,B1,B2	S	I	1	-1	0	2
7	Brazil	CB	S	CB,I	1	1	2	3
8	Bulgaria	CB	S	I	1	0	1	2
9	Canada	BI	Ss(**)	BI	3	0	3	1
10	Chile	B	SI	SI	3	0	3	1
11	Croatia	CB	S	I	1	0	1	2
12	Czech Republic	CB	S	I	1	0	1	2
13	Denmark	U	U	U	7	0	7	1
14	Estonia	U	U	U	7	0	7	1
15	Finland	BS	BS	I	5	0	5	1
16	France	BC,B1,B2,B3	CB,S	I	1	-1+1	1	3
17	Germany	U,CB	U	U	7	-1	6	1
18	Greece	CB	S	I	1	0	1	2
19	Hong Kong	CB	S	I	1	0	1	2
20	Hungary	U	U	U	7	0	7	1
21	Iceland	U	U	U	7	0	7	1
22	Ireland	CB	CB	CB	7	0	7	4
23	Israel	CB	S,I	I	1	1	2	2
24	Italy	CB,S	CB,S	I	1	1	2	3
25	Japan	U,CB	U	U	7	-1	6	1
26	Korea	U	U	U	7	0	7	1
27	Latvia	U	U	U	7	0	7	1
28	Lithuania	CB	S	I	1	0	1	2
29	Macedonia	CB	S	-	1	0	1	2
30	Mexico	BS	BS	I	5	0	5	1
31	Netherlands	CB,S	CB,S	I,S	1	1	2	3
32	New Zealand	CB	S	I	1	0	1	2
33	Nicaragua	U	U	U	7	0	7	1
34	Norway	U	U	U	7	0	7	1
35	Peru	BI	S	BI	3	0	3	1
36	Poland	B	B,S	I1,I2	1	1-1	1	1
37	Romania	CB	S	I	1	0	1	2
38	Russia	CB	S	I	1	0	1	2
39	Slovak Republic	CB	SI	SI	3	-1	2	2
40	Slovenia	CB	S	I	1	0	1	2
41	Spain	CB.Bs(**)	CB,S	I	1	1-1	1	3
42	Sweden	U	U	U	7	0	7	1
43	Switzerland	BS	BS	I	5	0	5	1
44	Turkey	B	S	I	1	0	1	1
45	Ukraine	CB	S	-	1	0	1	2
46	UK	U	U	U	7	0	7	1
47	USA	CB,B	S,Ss**	I,Is(**)	1	-1	0	2
48	Uruguay	BS, BC	BS, BC	I, BC	5	1	6	4

The initials have the following meaning: B = authority specialized in the banking sector; BI = authority specialized in the banking sector and insurance sector; CB = central bank; G= government; I = authority specialized in the insurance sector; S = authority specialized in the securities markets; U = single authority for all sectors ; BS = authority specialized in the banking sector and securities markets; SI = authority specialized in the insurance sector and securities markets.

(*) (b) = banking or central banking law; (s) = security markets law; (i) = insurance law

(**) = state or regional agencies

Table 1C: FAC Index, BCFA Index, MOC Index and CBI Index in 48 Countries

	Countries	FAC Index	CBFA Index	MOC Index	CBI Index
1	Argentina	1	2	0.803333	0.7475
2	Australia	6	1	0.408333	0.3525
3	Austria	6	1	0.7275	0.58125
4	Belgium	7	1	0.755	0.6225
5	Bolivia	3	1	0.52	0.395
6	Bosnia	0	2	0.943333	0.8325
7	Brazil	2	3	0.36	0.2275
8	Bulgaria	1	2	0.8875	0.8325
9	Canada	3	1	0.678333	0.60125
10	Chile	3	1	0.353333	0.27
11	Croatia	1	2	0	0
12	Czech Republic	1	2	0.755	0.6225
13	Denmark	7	1	0.554167	0.4775
14	Estonia	7	1	0.915833	0.8325
15	Finland	5	1	0.7525	0.6225
16	France	1	3	0.789167	0.7475
17	Germany	6	1	0.710833	0.56
18	Greece	1	2	0.755	0.6225
19	Hong Kong	1	2	0.638333	0.54125
20	Hungary	7	1	0.670833	0.53875
21	Iceland	7	1	0.63	0.56
22	Ireland	7	4	0.436667	0.3325
23	Israel	2	2	0.373333	0.33125
24	Italy	2	3	0.290833	0.0825
25	Japan	6	1	0.485	0.31125
26	Korea	7	1	0.519167	0.435
27	Latvia	7	1	0.755833	0.67625
28	Lithuania	1	2	0.7075	0.645
29	Macedonia	1	2	0.705833	0.71625
30	Mexico	5	1	0.664167	0.56
31	Netherlands	2	3	0.443333	0.31125
32	New Zealand	1	2	0.526667	0.37375
33	Nicaragua	7	1	0.61	0.6025
34	Norway	7	1	0.429167	0.18625
35	Peru	3	1	0.554167	0.54
36	Poland	1	1	0.644167	0.45625
37	Romania	1	2	0.686667	0.645
38	Russia	1	2	0.554167	0.4775
39	Slovak Republic	2	2	0.685833	0.6025
40	Slovenia	1	2	0.519167	0.395
41	Spain	1	3	0.761667	0.70625
42	Sweden	7	1	0.623333	0.51875
43	Switzerland	5	1	0.3875	0.29
44	Turkey	1	1	0.588333	0.4975
45	Ukraine	1	2	0.186667	0.145
46	UK	7	1	0.415833	0.2075
47	USA	0	2	0.595833	0.4775
48	Uruguay	6	4	0.409167	0.27

Table 2 Ordered Estimates with
Central Bank Involvement and Monetary Commitment

VARIABLES	Logit I	II	III	IV	Probit I	II	III	IV
DEPENDENT VARIABLE	FAC	FAC		FAC	FAC	FAC		FAC
CBFA								
Coefficient β1	-0.86		-1.04	-0.99	-0.46		-0.57	-0.57
Std. Error	(0.45)		(0.47)	(0.57)	(0.22)		(0.23)	(0.31)
P >z	0.06*		0.03**	0.08*	0.04**		0.01***	0.06 *
MOC								
Coefficient β13		-3.33	-4.04	-3.76		-1.73	-2.33	-2.32
Std. Error		(1.81)	(1.86)	(2.49)		(1.00)	(1.07)	(1.41)
P >z		0.06 *	0.03 **	0.13		0.08 *	0.03 **	0.10 *
CBFAMOC								
Coefficient β13				0.17				0.00
Std. Error				(1.03)				(0.58)
P >z				0.86				0.99
MvB								
Coefficient β2	1.04	0.95	1.23	1.22	0.58	0.62	0.69	0.69
Std. Error	(0.79)	(0.80)	(0.81)	(0.81)	(0.45)	(0.46)	(0.46)	(0.47)
P >z	0.19	0.23	0.13	0.13	0.20	0.17	0.13	0.14
mcap								
Coefficient β3	-1.33	-1.04	-1.25	-1.24	-0.82	-0.68	-0.84	-0.84
Std. Error	(0.84)	(0.82)	(0.86)	(0.86)	(0.48)	(0.48)	(0.50)	(0.50)
P >z	0.11	0.20	0.14	0.15	0.09 *	0.15	0.09*	0.09 *
goodgov								
Coefficient β4	1.95	1.48	1.63	1.61	1.17	0.95	1.05	1.05
Std. Error	(0.92)	(0.89)	(0.93)	(0.95)	(0.52)	(0.52)	(0.53)	(0.54)
P >z	0.03 **	0.09 *	0.08 *	0.09 *	0.02 **	0.07 *	0.05 **	0.05 *
Gdp								
Coefficient β5	-0.0005	-0.0006	-0.0006	-0.0006	-0.0003	-0.0003	-0.0003	-0.0003
Std. Error	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
P >z	0.01***	0.00***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
OECD								
Coefficient β6	-0.74	-0.07	-0.83	-0.79	-0.52	-0.32	-0.64	-0.62
Std. Error	(0.98)	(0.94)	(1.01)	(1.05)	(0.54)	(0.52)	(0.54)	(0.56)
P >z	0.45	0.93	0.40	0.45	0.33	0.54	0.24	0.26
Europe								
Coefficient β7	0.52	0.47	1.16	1.17	0.36	0.45	0.72	0.72
Std. Error	(0.88)	(0.86)	(0.92)	(0.93)	(0.47)	(0.49)	(0.51)	(0.51)
P >z	0.54	0.58	0.20	0.20	0.44	0.36	0.16	0.16
Anglo Saxon Law								
Coefficient β8	0.35	0.52	0.74	0.74	0.45	0.31	0.60	0.60

Std. Error	(1.29)	(1.24)	(1.28)	(1.28)	(0.72)	(0.72)	(0.74)	(0.74)
P >z	0.78	0.67	0.56	0.56	0.52	0.66	0.41	0.41
French Law								
Coefficient β9	0.89	0.56	1.20	1.21	0.62	0.33	0.78	0.78
Std. Error	(0.98)	(0.96)	(1.01)	(1.01)	(0.58)	(0.56)	(0.59)	(0.59)
P >z	0.36	0.56	0.23	0.23	0.28	0.54	0.18	0.18
GermanScandLaw								
Coefficient β10	2.36	3.37	3.04	3.00	1.44	1.86	1.75	1.75
Std. Error	(1.24)	(1.28)	(1.33)	(1.35)	(0.69)	(0.70)	(0.71)	(0.72)
P >z	0.05 **	0.00***	0.00***	0.02 **	0.03 **	0.0 ***	0.0 ***	0.01 ***
Latitude								
Coefficient β12	-1.92	-1.59	-0.95	-0.94	-0.70	-0.52	-0.20	-0.19
Std. Error	(2.92)	(3.00)	(3.00)	(3.00)	(1.76)	(1.77)	(1.80)	(1.80)
P >z	0.51	0.59	0.75	0.75	0.68	0.76	0.91	0.91
No of observations	**48**	**48**	**48**	**48**	**48**	**48**	**48**	**48**
LR chi2(5)	34.29	34.00	39.40	39.43	35.13	33.94	40.04	40.09
Prob>chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.20	0.20	0.23	0.23	0.21	0.20	0.24	0.24
Log Likelihood	-65.10	-65.25	-62.55	-62.53	-64.68	-65.28	-62.20	-62.20

Note: * indicates statistical significance at one percent; ** indicates statistical significance at five percent; * indicates statistical significance at ten percent.**

Table 3 Ordered Estimates with Central Bank Involvement and Central Bank Independence

VARIABLES	**Logit I**	**II**	**III**	**IV**	**Probit I**	**II**	**III**	**IV**
DEPENDENT VARIABLE	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**
CBFA								
Coefficient β1	-0.86		-1.15	-1.10	-0.46		-0.63	-0.63
Std. Error	(0.45)		(0.48)	(0.56)	(0.22)		(0.23)	(0.30)
P >z	0.06*		0.01***	0.04 **	0.04**		0.00 **	0.03 **
CBI								
Coefficient β13		-3.80	-4.72	-4.32		-1.98	-2.75	-2.67
Std. Error		(1.72)	(1.78)	(2.28)		(0.94)	(1.03)	(1.69)
P >z		0.02 **	0.00***	0.12		0.03 **	0.00 **	0.09 *
CBFACBI								
Coefficient β13				0.22				0.04
Std. Error				(1.20)				(0.68)
P >z				0.85				0.94
MvB								
Coefficient β2	1.04	0.94	1.25	1.24	0.58	0.61	0.69	0.69
Std. Error	(0.79)	(0.81)	(0.82)	(0.82)	(0.45)	(0.46)	(0.47)	(0.47)
P >z	0.19	0.20	0.12	0.13	0.20	0.18	0.14	0.14

mcap								
Coefficient β3	-1.33	-1.11	-1.41	-1.40	-0.82	-0.73	-0.92	-0.91
Std. Error	(0.84)	(0.83)	(0.88)	(0.89)	(0.48)	(0.49)	(0.51)	(0.51)
P >z	0.11	0.17	0.11	0.11	0.09 *	0.13	0.07 *	0.07 *
goodgov								
Coefficient β4	1.95	1.53	1.77	1.75	1.17	0.98	1.10	1.09
Std. Error	(0.92)	(0.88)	(0.84)	(0.95)	(0.52)	(0.52)	(0.54)	(0.54)
P >z	0.03 **	0.08 *	0.06 *	0.06 *	0.02 **	0.06 *	0.04 *	0.04 *
Gdp								
Coefficient β5	-0.0005	-0.0007	-0.0006	-0.0006	-0.0003	-0.0004	-0.0004	-0.0004
Std. Error	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
P >z	0.01***	0.00***	0.01***	0.01***	0.01***	0.01***	0.00***	0.00***
OECD								
Coefficient β6	-0.74	-0.12	-1.00	-0.96	-0.52	-0.36	-0.71	-0.71
Std. Error	(0.98)	(0.94)	(1.00)	(1.06)	(0.54)	(0.53)	(0.55)	(0.56)
P >z	0.45	0.89	0.33	0.36	0.33	0.49	0.19	0.21
Europe								
Coefficient β7	0.52	0.40	1.12	1.13	0.36	0.42	0.72	0.72
Std. Error	(0.88)	(0.85)	(0.91)	(0.92)	(0.47)	(0.49)	(0.51)	(0.51)
P >z	0.54	0.63	0.22	0.21	0.44	0.38	0.15	0.15
Anglo Saxon Law								
Coefficient β8	0.35	0.57	0.78	0.77	0.45	0.32	0.66	0.66
Std. Error	(1.29)	(1.23)	(1.28)	(1.29)	(0.72)	(0.73)	(0.75)	(0.75)
P >z	0.78	0.63	0.54	0.54	0.52	0.65	0.37	0.37
French Law								
Coefficient β9	0.89	0.44	1.12	1.12	0.62	0.28	0.75	0.76
Std. Error	(0.98)	(0.96)	(1.01)	(1.01)	(0.58)	(0.56)	(0.59)	(0.59)
P >z	0.36	0.64	0.26	0.26	0.28	0.61	0.20	0.20
GermanScandLaw								
Coefficient β10	2.36	3.31	2.91	2.86	1.44	1.82	1.78	1.77
Std. Error	(1.24)	(1.26)	(1.32)	(1.34)	(0.69)	(0.69)	(0.71)	(0.72)
P >z	0.05 **	0.00***	0.02 **	0.03 **	0.03 **	0.0 ***	0.01***	0.02 **
Latitude								
Coefficient β12	-1.92	-1.44	-0.82	-0.83	-0.70	-0.45	-0.07	-0.06
Std. Error	(2.92)	(3.04)	(3.04)	(3.04)	(1.76)	(1.78)	(1.82)	(1.82)
P >z	0.51	0.63	0.78	0.78	0.68	0.79	0.96	0.97
No of observations	**48**	**48**	**48**	**48**	**48**	**48**	**48**	**48**
LR chi2(5)	34.29	35.72	42.20	42.23	35.13	35.49	42.79	42.80
Prob>chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.20	0.21	0.25	0.25	0.21	0.21	0.26	0.26
Log Likelihood	-65.10	-64.39	-61.15	-61.13	-64.68	-64.50	-60.85	-60.85

Note: * indicates statistical significance at one percent; ** indicates statistical significance at five percent; * indicates statistical significance at ten percent.**

Table 4 Ordered Estimates with
Central Bank Involvement and Central Bank Age

VARIABLES	Logit I	II	III	Probit I	II	III
DEPENDENT VARIABLE	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**	**FAC**
CBFA						
Coefficient β1	-0.86		-0.85	-0.46		-0.44
Std. Error	(0.45)		(0.48)	(0.22)		(0.24)
P >z	0.06*		0.07*	0.04**		0.06**
CBAGE						
Coefficient β13		0.001	0.0007		0.0009	0.0003
Std. Error		(0.005)	(0.006)		(0.003)	(0.003)
P >z		0.72	0.91		0.75	0.92
CBFACBAGE						
Coefficient β13			-0.00008			-0.0002
Std. Error			(0.0033)			(0.001)
P >z			0.98			0.89
MvB						
Coefficient β2	1.04	0.76	1.03	0.58	0.53	0.57
Std. Error	(0.79)	0.79	0.80	(0.45)	(0.45)	(0.46)
P >z	0.19	0.33	0.20	0.20	0.24	0.21
mcap						
Coefficient β3	-1.33	-1.20	-1.34	-0.82	-0.72	-0.82
Std. Error	(0.84)	(0.82)	(0.84)	(0.48)	(0.48)	(0.49)
P >z	0.11	0.14	0.11	0.09 *	0.13	0.09 *
goodgov						
Coefficient β4	1.95	1.80	1.94	1.17	1.06	1.16
Std. Error	(0.92)	(0.89)	(0.92)	(0.52)	(0.51)	(0.52)
P >z	0.03 **	0.04 **	0.03 **	0.02 **	0.03 **	0.02 **
Gdp						
Coefficient β5	-0.0005	-0.0006	-0.0005	-0.0003	-0.0003	-0.0003
Std. Error	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
P >z	0.01***	0.00***	0.01***	0.01***	0.01***	0.01***
OECD						
Coefficient β6	-0.74	-0.12	-0.73	-0.52	-0.30	-0.51
Std. Error	(0.98)	(0.93)	(1.00)	(0.54)	(0.52)	(0.54)
P >z	0.45	0.89	0.46	0.33	0.56	0.34
Europe						
Coefficient β7	0.52	0.01	0.52	0.36	0.18	0.37
Std. Error	(0.88)	(0.84)	(0.89)	(0.47)	(0.47)	(0.49)
P >z	0.54	0.98	0.56	0.44	0.69	0.44
Anglo Saxon Law						
Coefficient β8	0.35	0.23	0.35	0.45	0.22	0.46
Std. Error	(1.29)	(1.25)	(1.31)	(0.72)	(0.72)	(0.73)

P >z	0.78	0.85	0.78	0.52	0.75	0.52
French Law						
Coefficient β9	0.89	0.28	0.85	0.62	0.20	0.63
Std. Error	(0.98)	(1.00)	(1.09)	(0.58)	(0.59)	(0.65)
P >z	0.36	0.77	0.43	0.28	0.72	0.33
GermanScandLaw						
Coefficient β10	2.36	2.66	2.35	1.44	1.58	1.43
Std. Error	(1.24)	(1.22)	(1.24)	(0.69)	(0.69)	(0.70)
P >z	0.05 **	0.02 **	0.06 *	0.03 **	0.02 **	0.04 **
Latitude						
Coefficient β12	-1.92	-2.56	-2.01	-0.70	-1.02	-0.73
Std. Error	(2.92)	(3.02)	(3.02)	(1.76)	(1.80)	(1.82)
P >z	0.51	0.39	0.50	0.68	0.57	0.68
No of observations	**48**	**48**	**48**	**48**	**48**	**48**
LR chi2(5)	34.29	30.50	34.30	35.13	30.98	35.14
Prob>chi2	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.20	0.18	0.20	0.21	0.18	0.21
Log Likelihood	-65.10	-67.00	-65.10	-64.68	-66.76	-64.67

Note: * indicates statistical significance at one percent; ** indicates statistical significance at five percent; * indicates statistical significance at ten percent.**

Table 5 Ordered Estimates with Different Dependant Variable: Central Bank Involvement

VARIABLES	Logit (a)	Probit (a)
DEPENDENT VARIABLE	**CBFA**	**CBFA**
FAC		
Coefficient β1	-0.65	-0.29
Std. Error	(0.21)	(0.11)
P >z	0.00***	0.00***
MvB		
Coefficient β2	0.76	0.21
Std. Error	(0.94)	(0.54)
P >z	0.41	0.68
mcap		
Coefficient β3	-0.99	-0.71
Std. Error	(0.98)	(0.60)
P >z	0.31	0.23

goodgov		
Coefficient β4	0.51	0.22
Std. Error	(1.03)	(0.57)
P >z	0.62	0.69
Gdp		
Coefficient β5	0.00001	0.00001
Std. Error	0.00002	0.00001
P >z	(0.94)	(0.92)
OECD		
Coefficient β6	2.09	1.32
Std. Error	(1.17)	(0.67)
P >z	0.07 *	0.05 **
Europe		
Coefficient β7	2.07	1.19
Std. Error	(1.33)	(0.73)
P >z	0.12	0.10 *
Anglo Saxon Law		
Coefficient β8	2.15	1.88
Std. Error	2.11	1.17
P >z	0.30	0.10 *
French Law		
Coefficient β9	2.05	1.48
Std. Error	(1.30)	(0.77)
P >z	0.11	0.05 **
GermanScandLaw		
Coefficient β10	-34.41	- 6.81
Std. Error	(3.6e+07)	(203)
P >z	1.00	1.00
Latitude		
Coefficient β12	0.91	1.17
Std. Error	(3.56)	(2.06)
P >z	0.79	0.57
No of observations	**48**	**48**
LR chi2(5)	32.16	29.23
Prob>chi2	0.00	0.00
Pseudo R2	0.30	0.27
Log Likelihood	-37.31	-38.78

Note: * indicates statistical significance at one percent; ** indicates statistical significance at five percent; * indicates statistical significance at ten percent. (a) 9 observations completely determined. Standard errors questionable.**

Table 6 Ordered Estimates with Different Independent Variable: Central Bank Involvement

VARIABLES	Logit	Probit
DEPENDENT VARIABLE	**FAC**	**FAC**
CBFA TWO		
Coefficient β1	-0.43	-0.23
Std. Error	(0.22)	(0.11)
P >z	0.06*	0.04**
MvB		
Coefficient β2	1.04	0.58
Std. Error	(0.79)	(0.45)
P >z	0.19	0.20
mcap		
Coefficient β3	-1.33	-0.82
Std. Error	(0.84)	(0.48)
P >z	0.11	0.09 *
goodgov		
Coefficient β4	1.95	1.17
Std. Error	(0.92)	(0.52)
P >z	0.03 **	0.02 **
Gdp		
Coefficient β5	-0.0005	-0.0003
Std. Error	(0.0002)	(0.0001)
P >z	0.01***	0.01***
OECD		
Coefficient β6	-0.74	-0.52
Std. Error	(0.98)	(0.54)
P >z	0.45	0.33
Europe		
Coefficient β7	0.52	0.36
Std. Error	(0.88)	(0.47)
P >z	0.54	0.44
Anglo Saxon Law		
Coefficient β8	0.35	0.45
Std. Error	(1.29)	(0.72)
P >z	0.78	0.52
French Law		
Coefficient β9	0.89	0.62
Std. Error	(0.98)	(0.58)
P >z	0.36	0.28
GermanScandLaw		
Coefficient β10	2.36	1.44

Std. Error P >z	(1.24) 0.05 **	(0.69) 0.03 **
Latitude Coefficient β12 Std. Error P >z	 -1.92 (2.92) 0.51	 -0.70 (1.76) 0.68
No of observations	**48**	**48**
LR chi2(5)	34.29	35.13
Prob>chi2	0.00	0.00
Pseudo R2	0.20	0.21
Log Likelihood	-65.10	-64.68

Note: * indicates statistical significance at one percent; ** indicates statistical significance at five percent; * indicates statistical significance at ten percent.**

Table 7 Correlation Matrix

	CBFA	MOC	CBI	CBICUK	CBAGE
CBFA	1				
MOC	-0.1650	1			
CBI	-0.1424	0.9621	1		
CBAGE	-01284	0.0088	-0.0489	-0.3671	1

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