APPENDIX C

Bank supervision and regulation indicators

The purpose of this appendix is to present the methodology used by Barth *et al.* (2001) to construct the indicators used in the regional comparison presented in Chapter 2.

Competition regulatory variables (Tables 3.3 and 3.4)
Barth *et al.* (2001) present three variables that qualitatively capture the extent to which competition within the banking industry is restricted. The variables all relate to the ability of existing or new banks to enter the banking business. More specifically, the three variables are defined and quantified as follows.
Limitations on foreign ownership of domestic banks: whether there are any limitations placed on the ownership of domestic banks by foreign banks. If there are any restrictions, this variable is assigned a value of 1 and a value of 0 otherwise.
Limitations on foreign bank entry: whether there are any limitations placed on the ability of foreign banks to enter the domestic banking industry. If there are any restrictions, this variable is assigned a value of 1 and a value of 0 otherwise.
Entry into banking requirements: whether there are specific legal submissions required to obtain a licence to operate as a bank. Barth *et al.* (2001) considered different types of submissions that could be considered by the banking authorities when deciding whether or not to grant a licence. These are as follows:

1. Draft by-laws.
2. Intended organisational chart.
3. First three-year financial projections.

4. Financial information on main potential shareholders.
5. Background/experience of future directors.
6. Background/experience of future managers.
7. Sources of funds to be used to capitalise the new bank.
8. Intended differentiation of new bank from other banks.

Each of these submissions was assigned a value of 1 if it was required and a value of 0 otherwise. This means that the more information required by the regulatory authorities of the type indicated when deciding upon whether or not to issue a licence, the more restrictive will be the entry into banking. The Entry into Banking Requirements variable is created by adding these eight variables together. It therefore may range in value from 0 to 8, with higher values indicating more restrictiveness.

Official supervisory action variable (Tables 3.5 and 3.6).
The following variables was constructed by Barth *et al.* (2001) to capture quantitatively the degree to which supervisory authorities may intervene to promote a 'safe and sound' banking industry.
Official supervisory power: whether the supervisory authorities have the authority to take specific actions to prevent and correct problems. This variable is based upon yes or no responses to the following 16 questions:

1. Can supervisors meet with any external auditors to discuss their reports without bank approval?
2. Are auditors legally required to report any misconduct by managers or directors to the supervisory authorities?
3. Can the supervisory authorities take legal action against external auditors for negligence?
4. Can the supervisory authorities force a bank to change its internal organisational structure?
5. Can the deposit insurance agency take legal action against bank directors or officers?
6. Are off-balance sheet items disclosed to the supervisory authorities?

7. Does failure to abide by a cease-desist type order lead to the automatic imposition of civil and penal sanctions on the directors and managers of a bank?
8. Can the supervisory authorities order a bank's directors/managers to provide provisions to cover actual or potential losses?
9. Can the supervisory authorities suspend the directors' decision to distribute dividends?
10. Can the supervisory authorities suspend the directors' decision to distribute bonuses?
11. Can the supervisory authorities suspend the directors' decision to distribute management fees?
12. Can the supervisory authorities supersede shareholder rights and declare a bank insolvent?
13. Can the supervisory authorities suspend some or all ownership rights of a problem bank?
14. Regarding bank restructuring and reorganisation, can the supervisory authorities supersede shareholder rights?
15. Regarding bank restructuring and reorganisation, can the supervisory authorities remove and replace management?
16. Regarding bank restructuring and reorganisation, can the supervisory authorities remove and replace directors?

The answers to these 16 questions collectively constitute our measure of Official Supervisory Power. Barth *et al.* (2001) specifically assign a value of 1 to a 'yes' answer and a value of 0 to a 'no' answer. This variable is the sum of these assigned values and therefore may range from 0 to 16, with a higher value indicating more power.

Prompt corrective action index: measures whether a law establishes pre-determined levels of bank solvency deterioration that force automatic enforcement actions such as intervention. If this is indeed the case, Barth *et al.* assign a value of 1, 0 otherwise. This is subsequently multiplied by the score obtained from questions (4), (7), (8), (9), (10) and (11) as described above. The prompt corrective action variable may therefore range from 0 to 6, with a higher value indicating more promptness in responding to problems.

Restructuring power index: seeks to quantify whether the supervisory authorities have the power to restructure and reorganise a troubled bank. This variable is simply the sum of the score obtained from questions (14), (15) and (16) as described above. It may range in value from a low of 0 to a high of 3, with a higher value indicating more power.

Insolvency power index: looks at whether the supervisory authorities have the power to declare a deeply troubled bank insolvent. This variable is simply the sum of questions (12) and (13) as described above. It may range in value from 0 to 2, with a higher value indicating greater power.

Bank activity regulatory variables (Tables 3.7 and 3.8)

There are three regulatory variables that affect important activities in which banks may engage. The three variables involve securities, insurance and real estate activities. Barth *et al.* (2001) specifically measure the degree to which the national regulatory authorities in countries allow banks to engage in the following three fee based rather than more traditional interest spread-based activities:

a. **Securities:** the ability of banks to engage in the business of securities underwriting, brokering, dealing, and all aspects of the mutual fund industry.

b. **Insurance**: the ability of banks to engage in insurance underwriting and selling.

c. **Real Estate**: the ability of banks to engage in real estate investment, development and management.

The World Bank and surveys made by the Office of the Comptroller of Currency (OCC) provided information in response to a series of individual questions regarding each country's regulations concerning these activities. Using this information, Barth *et al.* quantified the degree of regulatory restrictiveness for each aggregate or composite activity on a scale from 1 to 4, with larger numbers representing greater restrictiveness. The definitions of the 1 through 4 designations are as follows:

1. **Unrestricted** – a full range of activities in the given category can be conducted directly in the bank.
2. **Permitted** – a full range of activities can be conducted, but all or some must be conducted in subsidiaries.
3. **Restricted** – less than a full range of activities can be conducted in the bank or subsidiaries.
4. **Prohibited** – the activity cannot be conducted in either the bank or subsidiaries.

The difference between a 1 and 2 indicates only the locations in which the activity may be conducted, not whether the activity is restricted in any way.

Mixing banking/commerce regulatory variables (Tables 3.7 and 3.8)
Barth *et al.* (2001) construct two aggregate variables to measure the degree of regulatory restrictiveness on the mixing of banking and commerce. Once again the regulatory restrictiveness for each variable is quantified on a scale from 1 to 4. The specific variable definitions and the definitions of the 1–4 designations are as follows:
Nonfinancial firms owning banks: the ability of non-financial firms to own and control banks.

1. **Unrestricted** – a non-financial firm may own 100 per cent of the equity in a bank.
2. **Permitted** – unrestricted with prior authorisation or approval.
3. **Restricted** – limits are placed on ownership, such as a maximum per cent of a bank's capital or shares.
4. **Prohibited** – no equity investment in a bank.

Banks owning non-financial firms: the ability of banks to own and control nonfinancial firms.

1. **Unrestricted** – a bank may own 100 per cent of the equity in any non-financial firm.
2. **Permitted** – a bank may own 100 per cent of the equity in a non-financial firm, but ownership is limited based on a bank's equity capital.

3. **Restricted** – a bank can only acquire less than 100 per cent of the equity in a non-financial firm.
4. **Prohibited** – a bank may not acquire any equity investment in a non-financial firm.

Capital regulatory variables (Tables 3.9 and 3.10)

Barth *et al.* (2001) list four different capital regulatory variables that capture different but complementary measures of the stringency of regulatory capital requirements across countries. The specific measures are as follows:

Overall capital stringency: the objective is to measure whether there are explicit regulatory requirements regarding the amount of capital that a bank must have relative to various guidelines. Barth *et al.* (2001) consider several guidelines to determine the degree to which the leverage potential for capital is limited. These are as follows:

1. Does the minimum required capital-to-asset ratio conform to the Basle guidelines?
2. Does the minimum ratio vary with market risk?
3. Is the market value of loan losses deducted from reported accounting capital?
4. Are unrealised losses in the securities portfolio deducted from reported accounting capital?
5. Are unrealised foreign exchange losses deducted from reported accounting capital?

Barth *et al.* (2001) assign a value of 1 to each of the above questions if the answer is 'yes' and a 0 otherwise. In addition, a value of 1 is assigned if the fraction of revaluation gains that is allowed to count as regulatory capital is less than 0.75. Otherwise, a value of 0 is assigned. Adding together these variables creates the variable overall capital stringency. It ranges in value from 0 to 6, with higher values indicating greater stringency. Notice that this particular measure of capital stringency is to some degree capturing whether or not regulatory capital is solely an accounting concept or at least partially a market-value concept.

Initial capital stringency: is created to measure whether the source of funds counted as regulatory capital can include assets other than cash or government securities and borrowed funds as well as whether the sources are verified by the regulatory or supervisory authorities. More specifically, the following three questions were asked:

1. Can initial and subsequent infusions of regulatory capital include assets other than cash or government securities?
2. Can the initial infusion of capital be based on borrowed funds?
3. Are the sources of funds that count as regulatory capital verified by the regulatory or supervisory authorities?

A 'yes' is assigned a value of 1. Otherwise, values of 0 are assigned. Adding these three variables together constitutes the measure of initial capital stringency – a variable that may range from a low of 0 to a high of 3, with a higher value indicating less stringency.