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Determinants of bank efficiency during unstable macroeconomic environment: Empirical evidence from Malaysia

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ABSTRACT

The present study investigates for the first time the efficiency of Malaysian banking sector around the Asian financial crisis 1997. The efficiency estimates of individual banks are evaluated by using the Data Envelopment Analysis (DEA) approach. To examine the robustness of the estimated efficiency scores under various alternatives and to differentiate how efficiency scores vary with changes in inputs and outputs, the present study focuses on three major approaches viz., intermediation approach, value added approach, and operating approach. The analysis further links the variation in calculated efficiencies to a set of explanatory variables, i.e. bank size, profitability, and ownership. The empirical findings clearly bring forth the high degree of inefficiency in the Malaysian banking sector, particularly a year after the East Asian crisis. The results suggest that the decline in technical efficiency is more abrupt under the intermediation approach relative to the value added approach and operating approach. The regression results focusing on bank efficiency and other bank specific traits suggest that efficiency is negatively related to expense preference behavior and economic conditions, while bank efficiency is positively related to loans intensity.

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1. Introduction

The world was stunned when East Asia, the highest growth region during the 1990s, was hit by a banking crisis in 1997. The crisis, which started in Thailand and spread rapidly throughout the region, drew widespread attention from economists and financial analysts. It was characterized by skyrocketing interest rates (+34% in Korea; +13% in Indonesia), a dramatic drop in stock price indexes (−55% in Thailand; −52% in Malaysia), real exchange rate depreciation (−97% in Korea; −87% in Thailand), a decline in net capital flow to the region (−$20 billion), and a drop in the region's gross domestic product (−$481 billion).

In order to understand the nature of the East Asian crisis, as well as similar crises around the world, economists have used a variety of methodologies while focusing primarily on macro-level variables. Papers in the macro-tradition include Frankel and Rose (1996), Sachs et al. (1996), Kaminsky et al. (1998), Corsetti et al. (1998), Eichengreen and Rose (1998), Chinn (1998), Kaminsky and Reinhart (1998), Krugman (1999), Berg and Pattillo (1999), Alba et al. (1999), and Tanner (2000), among others. In addition to these studies, a number of papers have adopted a microperspective deriving from bank's balance sheet and income statements. Generally, the variables examined in these papers follow the well-known CAMEL framework.[1] These include Sinkey (1975), Barth et al. (1985), Lane et al. (1986), Thomson (1991), and Gonzalez-Hermosillo et al. (1997). There were also papers which combined macro- and microvariables, including those of Goldstein and Turner (1996), Honohan (1997), and Gonzalez-Hermosillo (1999).

The characteristics of banking systems that are more prone to experience banking and financial crisis and its impact has also drawn academic interests in recent years. Barth et al. (2000) suggests that greater regulatory restrictions on bank activities are associated with higher probability of suffering a major banking crisis. Beck et al. (2006) find that the likelihood of financial crises is lower in more concentrated banking systems, yet higher in less competitive and countries with less developed legal systems. Daniel and Jones (2007) suggests that even if a banking system is well designed, countries will enjoy an initial period of rapid low risk growth, before entering a period with an elevated risk of banking crisis. By using aggregate and bank level data for 35 developed and developing countries, Dermiguc-Kunt et al. (2006) find that depositors leave weaker banks for stronger ones following a banking crisis. Kroszner et al. (2007) find that sectors that are highly dependent on external finance tend to experience greater contraction during a banking crisis in countries with deeper financial systems than in countries with shallower financial systems.

The literature examining the efficiency of financial institutions with parametric and/or non-parametric frontier techniques has expanded rapidly in recent times. While, a large body of literature spanning a half-century exists on banking efficiency in the United States (see surveys in Berger et al., 1993; Berger and Humphrey, 1997; Berger, 2007 and references therein), more recent studies examine several other countries such as India (Ataullah and Le, 2006), Hong Kong (Drake et al., 2006), Greece (Pasiouras, 2008b), Singapore (Sufian, 2007), and Ukraine (Kyj and Isik, 2008).

Apart from focusing on various countries, these studies also examine several other issues of bank efficiency, i.e. the impact of risk on bank efficiency (e.g. Drake and Hall, 2003), the impact of off-balance sheet activities on bank efficiency (e.g. Lozano-Vivas and Pasiouras, 2008), the relationship between bank efficiency and share prices (e.g. Pasiouras et al., 2008), the impact of mergers on bank efficiency (e.g. Al-Sharkas et al., 2008). The comparison of efficiency between foreign and domestic banks has also been studied extensively (e.g. Bhattacharya et al., 1997; Isik and Hassan, 2002; Ataullah and Le, 2006).

Despite its severity and deep influence on both the real and financial sectors, the impact of the East Asian crisis of 1997 on the efficiency of the financial industry has not been critically examined yet. Fukuyama (1995), Humphrey and Pulley (1997), Leightner and Lovell (1998), and Isik and Hassan (2003a) have suggested that frontier techniques can be used to assess the impact of major economic events such as economic crisis or financial liberalization on the performance of banking firms. How-

[1] The CAMEL framework is used by financial regulators to rate the health of financial institutions. The framework criteria are associated with *C*apital Adequacy (C), *A*sset Quality (A), *M*anagement (M), *E*arnings (E), and *L*iquidity (L).