Interest rate liberalization and capital adequacy in models of financial crises

Ray Barrell¹, Dilruba Karim², Alexia Ventouri¹,∗

¹ Department of Economics and Finance, Brunel University, Uxbridge, Middlesex UB8 3PH, United Kingdom
² School of Management and Business, King’s College London, 150 Stamford Street, London SE1 9NH, United Kingdom

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1. Introduction

If we are to learn enduring lessons from the sub-prime crisis we need to know whether it was in some way unique, or whether it shared features in common with earlier banking crises. Recent research focusing on the macro determinants of crises provides evidence that OECD banking instability can be explained by capital adequacy, liquidity, house price growth and current account imbalances (Barrell et al., 2010, 2013). However by definition, these impacts are conditional on the regulatory environment under which banks operate. Over the last three decades the regulatory architecture has experienced major transformations, yet there is little consensus as to how these changes have affected bank risk taking behavior and hence crises probabilities. Given the established links between financial liberalization, crises and efficiency (Barth et al., 2006; Agoraki et al., 2011; Chortareas et al., 2013, 2016), their interaction with regulatory capital becomes paramount. Regulation of both deposit and lending rates was common in the OECD during the 1980s and 1990s (Edey and Hviding, 1995). For example, Regulation Q in the U.S. enforced interest rate controls for over 50 years on the premise that controlling deposit rate competition would allow banks to earn normal profits without resorting to risky loans and this in turn mitigated the need for regulatory capital.

This paper constitutes the first attempt, to our knowledge, to explicitly characterize the effects of interest rate liberalization on OECD banking crises between 1980 and 2012. Our approach combines both the macro (prudential) and micro strands of the literature on banking stability. To capture these dynamics we utilize the economic freedom index drawn from the Fraser Institute. Although the index characterizes different aspects of financial liberalization, not all of these are relevant to the OECD.¹ We focus explicitly on interest rate restrictions which changed under formal liberalization programs in many OECD economies during the 1980s and 1990s. We test for the direct impacts of interest rate liberal-

¹ For example, private sector credit controls as defined by the fiscal deficit to gross savings ratios would be of little concern in OECD economies during our sample period. Similarly central government ownership of banks captured by the% of deposits held in government banks would be low in market based OECD banking systems.

* Corresponding author.
E-mail addresses: ray.barrell@brunel.ac.uk (R. Barrell), dilly.karim@brunel.ac.uk (D. Karim), alexia.ventouri@kcl.ac.uk (A. Ventouri).

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ization on crisis probabilities and their indirect effects via capital adequacy.

Our results show that interest rate liberalization has a crises reducing effect in the OECD. Moreover, the beneficial effects of interest rate liberalization, or the removal of financial repression (see Reinhart, 2012) seems to work by strengthening the effects of capital buffers. In fact, a move towards financial repression after the sub-prime crisis may have marginally increased the probability of future crises. We also show that when we control for liberalization, capital adequacy and liquidity, the main driver of financial crises is property price growth. Other frequently cited factors, such as credit growth and fiscal deficits, do not seem to be significant.

The rest of the paper is organized as follows: Section 2 reviews the relevant literature. Section 3 presents the empirical methodology and the data. Section 4 discusses the empirical results, and Section 5 concludes.

2. Banks and the factors driving bank crises

Banking crises emerge because banks do not have enough liquidity to meet depositors’ needs and cannot access the wholesale market, or because loan losses have built up to the point where capital is exhausted. Hence, a relatively simple banking crisis model must include the liquid asset and capital ratios as explanatory variables. In addition, we should control for macro factors that affect the variability of loan losses and deposits. Before discussing the standard controls used in the literature, we note an important omission in these studies: none of them consider the impact of interest rate controls on bank behavior and performance. The pace of financial liberalization increased over the last three decades, particularly during the 1980s and 1990s. For example, the deregulation process in the European Union (1990s) considerably liberalized banks’ structural and conduct rules.2 This was accompanied by a parallel increase in prudential regulation, particularly in relation to a minimum capital adequacy.

The dates of liberalizations in our sample are given in Table 1. Perhaps the most high profile liberalization of deposit rates, the phasing out of Regulation Q in the U.S., began in 1980 and hence falls outside our sample. However, the Nordic countries and the U.K. deregulated their housing market lending in the mid-1980s, removing both lending and deposit rate restrictions. The U.K. liberalization of Building Society restrictions was phased in from late 1984 to early 1986 and hence we record it in 1985. At the same time both Spain and especially Italy began to relax their foreign exchange controls, and these impacted on the regulation of domestic deposit rates in both countries. The dismantling of exchange controls in Italy in late 1990 was also associated with moves to increase regional competition in banking and also to reduce compulsory reserves at the Central Bank, and deposit rates were further liberalized as a result. The granting of independence to the Bank of France in 1994 also coincided with significant increases in bank competition and interest rate deregulation, but these were in part a result of the European Commission’s response to the rescue of Credit Lyonnais. In the run up to the financial crisis in 2007–08 some countries, such as Italy attempted to control housing markets with interest rate controls, whilst Norway, by then a major balance of payments surplus country, attempted to control its exchange rate and inflation rate with controls on deposit rates in banks. It was the only country in our sample to do so over this period. Inevitably after the 2007 and 2008 crises there were a number of attempts to tighten controls, and those in the UK and Norway in 2008 and Italy in 2010 are of particular note for our purposes.

It is reasonable to question whether these changes to the regulatory architecture would impact on financial stability and crisis incidence. Since crisis prediction studies using contemporaneous datasets (e.g. Demirgüç-Kunt and Detragiache, 1998, 2005) cannot be classed as true early warning systems,3 Barrell et al. (2010, 2013) use lagged data and focus on the relatively homogeneous OECD banking system. In this context they show that capital adequacy, liquidity, property prices and current account deficits supersede traditional macro variables as crisis determinants. The lag structure of these models ensures true early warning properties and explanatory power within and out-of-sample is high. In this paper, we continue with the Barrell et al. (2013) model but recognize it is contingent on the degree of liberalization in each banking sector. Before turning to our interest rate liberalization variable, we briefly summarize the key explanatory variables in our base line model. The average values of real house price growth, liquidity and leverage across our sample of 14 countries is plotted in Fig. 1, along with the number of crises in each year between 1980 and 2008.

Crisis are often the result of poor quality lending. A boom in real estate prices inflates the availability of collateral causing lending to be excessive and credit to be mispriced. Several years after the expansion of lending to borrowers who were not credit worthy, problems normally start to appear. As we can see from Fig. 1 the house price booms in the late 1980s and the 2000s were followed by an increase in the number of financial crises. The problems associated with excess lending are exacerbated when real house prices start to fall, as they did around 1990 and also from 2006 in the U.S., with downturns starting later elsewhere. When prices fall from unsustainable levels, this process goes into reverse, sharply tightening credit conditions and overextended borrowers have strong incentives to default. Reinhart and Rogoff (2008) and Barrell et al. (2010) suggest that property price developments can change crisis probabilities. The incidence of crises may be mitigated by adequate levels of capital or by sufficient liquidity. As we can see from Fig. 1 liquidity levels fell in the approach to the rash of crises from 1987 onwards, but levels were rebuilt after lessons were learnt. However, from 1999, the new era of international competition in banking led to increasing economizing on liquidity levels, making it harder for the system to deal with crises as they emerged. In addition, the same environment led banks to begin to economize on leverage, and capital buffers began to shrink, raising the risks that a solvency crisis might emerge, as indeed it did in 2008.4

Widening current account imbalances have been common forerunners of banking crises in the OECD (Ferraretti and Razin, 2000; Edwards, 2002). They may be accompanied by monetary inflows enabling banks to expand credit excessively which inflates asset prices in an unsustainable manner.5 These trends may be exacerbated by lower real interest rates (Eichengreen and Rose, 2004). This may explain why financial liberalization often precedes current account liberalization so that banks can manage the intermediation of the capital inflows. The existence of a current account deficit also indicates a shortfall of national saving over investment

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2 See, for example, the banking directives enacted in the EU, as part of the Single Market Program.

3 These studies also rely on heterogeneous country sets and so the wide country coverage limits the explanatory data available for inclusion.

4 The standard deviation of capital adequacy also rose sharply after 2000, suggesting that some countries economised on capital more than others, and this cross section dimension is clearly important in the determination of the incidence of crises, as we see below. The standard deviation of liquidity also rose sharply around 2004, suggesting that banking systems in some countries were unwisely economising on this safety buffer as well.

5 In addition, foreigners may otherwise be willing to finance deficits in domestic currencies if they consider their assets are vulnerable to monetization via inflation, and such a cessation can disrupt asset markets and banks’ funding. See Haldane et al. (2007) for an assessment of the impact of such a hypothetical unwinding in the U.S.
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