Chapter 16
Developing EWS Models for Contemporary Crises Using Extreme Value Binary Models: The Cases of Eurozone and Argentinian Peso (2014)

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ABSTRACT

This chapter is presenting the most contemporary crises following the 2008 credit crunch and small scale following crises. Our sample consists of five countries (Cyprus, Greece, Ireland, Portugal and Argentine respectively) hit by crisis during 2010's. The Early Warning System (EWS) proposed is the Extreme Value Model (EVA) used previously for natural disasters and irregular phenomena. Its major advantage compared to other binary models is its focus to the turbulence periods and their characteristics contrast to possible trend models which exclude them. The results show that EVA fits better forecast and it gave positive and calm signals than similar logit and probit models for all five cases examined.

INTRODUCTION

If forecasting forthcoming crises is fascinating, preventing crises before been occurred is tremendous. Latest crisis following the global credit crunch hit Eurozone countries exposed structural problems little known before and put global economy under doubt. The existence of a common currency scheme dilated crisis definition from depreciation to sharp exchange reserves decline or interest rate spread raise sharing single currency. Argentina's incident on January 2014 is another example of a fast occurring crisis leading to latter bankruptcy. The fascinating history of crises continues and new and more complicated and requisite methods are availed to unravel faster and rigidly stiffer crises. For these turbulences predicting we deployed the Extreme Value Model (EVM) as an Early Warning System (EWS) used previously on rare events prediction such as natural disasters and recently applied to currency crisis forecasting literature as more ap-

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propriate. EVS has major advantages comparing to other binary methods applied earlier focusing on crisis period against the trend. The chapter is structured as follows; in the present part the ingress is displayed following by the literature review. On the third section main content of the chapter is presented divided to three parts (Issues and problems arisen, variables used and extreme value model results respectively) and finally the fourth fragment gives extracted conclusions and proposals for further research.

BACKGROUND

Literature Review

Even though financial crises have existed since ancient the scientific and systematic haft of them as currency crises is uncertain. The models of currency crises were built based on the real events. The first generation models were developed after the balance of payments crisis in Mexico (1973-82), Argentina (1978-81), and Chile (1983). The second generation models were developed after speculative attacks in Europe and Mexico in the 1990s. Finally, the third generation models started after the Asian crisis in 1997-98. The exact examination began and roused on the same time that pioneers (Salant and Henderson, 1978), had created the first Theoretical model on currency crises. Practically at the same time (Bilson, 1979) livened of the thought of "shadow rate" utilizing a probit model, found that it really had a forecasting ability but it wasn't important. In their later work (Blanco and Garber, 1986) and (Cumby and Van Weinberger, 1989) on the light of the theoretical models of first generation and the payments stop of Mexico in 1982 and Argentina in 1981, show that the domestic credit growth actually didn't have forecasting significance for the next period. In a more far reaching work (Klein and Marion, 1994) the authority settlements with abroad had demonstrated anticipating essentialness however inside a time of 24 months. Introducing long term variables (Edwards (1989), Edwards and Montiel (1989)) have introduced long term variables (3 years before the incident occurs) and their effects to the present crisis. They also introduced the compare process and measure between two or more countries based in them introducing the idea of crisis contagion. Also social or political variables can affect the crisis as denoted (Edwards and Santaella, 1993) where on crisis an IMF remedy intervene can be possible.

Possible later extensions concern active governmental involvement in crisis management and sterilization of reserve loss (Flood, Garber and Kramer 1996). Other extensions have shown that speculative attacks would generally be preceded by a real appreciation of the currency and a deterioration of the trade or current account balance, by an upward pressure of real wages and by higher interest rates (Garber and Svenson, 1994). Extensions also include target zone models (Krugman, 1991), post-collapse exchange rate systems other than permanent float, the possibility of foreign borrowing, capital controls, imperfect asset substitutability, and speculative attacks in which the domestic currency is under buying, rather than selling pressure.

Based on second generation theoretical models and the national banks' capacity to face the theorists and oppose. Capital flight possibility is introduced later (Klein M. and Marion N., 1994), and (Eichengreen, Rose and Wypolsz, 1995) studied the determinants of currency crises and added to their probit model unsuccessful examiners assaults. Later (Frankel and Rose, 1996), utilizing high expansion as a suspicion for cash emergencies, yet just 5 out of 117 occurrences had a positive indicator.

Models extended third generation adding variables which generally succeed to make sure figures. Later, alluding to practice (Krznar, 2004) had developed an EWS (Early Warning System) for Croatia applying a set of 40 variables had succeed to forecast and warn the central bank of the country