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## To intervene, or not to intervene: Monetary policy and the costs of currency crises

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### ABSTRACT

In case of speculative attacks, the central banks' decisions to intervene or not to intervene seem to play an important role for the economic costs of currency crises. The central bank can either abstain from intervening or start an intervention, which in turn can be successful or unsuccessful. Therefore, an adequate analysis of the costs of currency crises has to take into account three different types of currency crises: (i) an immediate depreciation without any central bank interventions, (ii) a successful defense, and (iii) an unsuccessful attempt to defend the exchange rate. We find that the decision of the central bank to intervene or to remain passive is risky. If the central bank intervenes and succeeds she can achieve the best growth performance on average. However, if the interventions are not maintained and the currency depreciates the subsequent output loss is particularly severe. Abstaining from an intervention yields a scenario with a relatively small drop in output. Giving in to a speculative attack rather than trying to fight it can thus be a suitable option for a risk-averse central bank.

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## 1. Introduction

Contrary to the typical public perception, currency crises can have very different economic outcomes, ranging from bust to boom. Turkey, for example, was subject to six currency crises between 1994 and 2006, which had quite different real effects (see Fig. 1). While output declined severely after the currency crises of 1994 and 2000, it hardly changed after the crisis of 1998. Output even increased in the aftermath of the currency crises of 2003, 2004 and 2006.

One possible determinant of these different crisis outcomes could be the monetary authority's crisis management. The central bank has in principle two options to respond to a speculative attack. She can either remain passive or intervene in the foreign exchange market in order to avoid a depreciation (see Fig. 2). If she decides to intervene, she can then either succeed or fail depending on the extent of her own actions and the strength of the speculative attack. These interactions between monetary authority and speculative traders give rise to the following four outcomes: no attack and three different types of currency crises, namely, immediate depreciation, successful defense and unsuccessful defense.<sup>1</sup>

So far neither the theoretical nor the empirical literature has adequately accounted for the role of monetary authorities in speculative attacks and thus the differences between the three types of currency crises.<sup>2</sup> First-generation models by Krugman (1979) and Flood and Garber (1984) explain a speculative attack in terms of underlying fundamentals, in particular a too expansionary fiscal policy with a central bank unsuccessfully attempting to defend the peg. In terms of our decision tree (see Fig. 2), the analysis is focused on the dichotomy *no attack vs. unsuccessful defense*. Second-generation models as proposed by Obstfeld (1994), Eichengreen et al. (1996) and Jeanne (2000) introduce the costs and benefits of exchange market interventions for a central bank and emphasize the role of self-fulfilling expectations and multiple equilibria. Implicitly these models focus on situations of *no attack vs. immediate depreciation*. The so-called third generation of currency crisis models encompasses very heterogeneous approaches and focuses on quite different issues, e. g. the fragility in the banking and financial system (see, e. g., Krugman, 1999; Chang and Velasco, 2001; Burnside et al., 2004), or the role of private information (see, e. g., Morris and Shin, 1998; Heinemann, 2000). Again, a common feature of these studies is their dichotomic approach, i. e. they compare general *crisis* with *no crisis* scenarios and neglect the heterogeneity of currency crises.

Empirical studies of currency crises also use binary crisis variables (*crisis vs. no crisis*), albeit in a somewhat different way.<sup>3</sup> In order to identify crisis events two basic approaches are typically used. A first approach identifies currency crises as substantial depreciations. The *significant depreciation* measure, as used by Frankel and Rose (1996), Milesi-Ferretti and Razin (1998) and Bussière et al. (2010), covers two types of crisis events: a speculative attack during which the central bank (i) does not undertake any defensive measures and lets the domestic currency depreciate immediately and (ii) an unsuccessful attempt of the central bank to defend the exchange rate. In terms of our approach (see Fig. 2) this crisis definition combines two types of crisis events, namely *immediate depreciation* and *unsuccessful defense*. A second popular way of proceeding is based on the so-called exchange market pressure index (EMPI) which takes into account any substantial action of central banks and/or speculative traders and is typically constructed as the weighted sum of depreciation rate, loss in reserves and interest rate increase (see, e. g., Eichengreen et al., 1995; Bussière and Fratzscher, 2006; Cerra and Saxena, 2008; Klaassen and Jager, 2011). Thus, it does not account for the heterogeneity of currency crises but rather combines all three types of events, namely *immediate depreciation*, *unsuccessful defense*, and *successful defense*.

<sup>1</sup> To simplify terminology we uniformly apply the term depreciation to devaluation as well as depreciation events, since currency crises – as we define them (see section 2) – are not limited to de jure or de facto fixed exchange rate regimes.

<sup>2</sup> See, e. g., Bauer and Herz (2010) and Daniëls et al. (2011), who explicitly model the simultaneous interactions between policy makers and speculative traders.

<sup>3</sup> While the theoretical literature has typically focused on the pre-crisis period to analyze the causes of currency crises, the vast empirical literature on currency crises can be differentiated into two major approaches: (i) studies that focus on crisis prediction (see, e. g., Bussière and Fratzscher, 2006; Gerdesmeier et al., 2009; Melvin and Taylor, 2009), and (ii) studies that analyze the aftermath of currency crises in particular output effects (see, e. g., Gupta et al., 2007; Cerra and Saxena, 2008).

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