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Trilemma policy convergence patterns and output volatility

Joshua Aizenman[a,b,*], Hiro Ito[c,1]

[a] University of California, Santa Cruz, United States
[b] NBER, United States
[c] Department of Economics, Portland State University, 1721 SW Broadway, Portland, OR 97201, United States

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ABSTRACT

We examine the development of open macroeconomic policy choices among developing economies from the perspective of the powerful "trilemma" hypothesis. We construct an index of divergence of the three trilemma policy choices, and evaluate its patterns in recent decades. We find that the three dimensions of the trilemma configurations are converging toward a "middle ground" among emerging market economies, equipped with managed exchange rate flexibility, underpinned by sizable holdings of international reserves, and intermediate levels of monetary independence and financial integration. We also find emerging market economies with more converged policy choices tend to experience smaller output volatility in the last two decades. Emerging markets with relatively low international reserves/GDP could experience higher levels of output volatility when they choose a policy combination with a greater degree of policy divergence while this heightened output volatility effect does not apply to economies with relatively high international reserves/GDP holding.

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1. Introduction

A fundamental contribution of the Mundell–Fleming framework is the impossible trinity, or the trilemma. The trilemma states that a country may simultaneously choose any two, but not all of the

* Corresponding author at: Economics Department, University of California, Santa Cruz, Engineering 2, 401, Santa Cruz, CA 95064, United States. Tel.: +1 831 459 2743.
E-mail addresses: jaizen@ucsc.edu (J. Aizenman), ito@pdx.edu (H. Ito).
[1] Tel.: +1 503 725 3930/3945; fax: +1 503 725 3930/3945.

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following three policy goals – monetary independence, exchange rate stability and financial integration. Among Mundell's seminal contributions in the 1960s was the derivation of the trilemma in the context of an open economy extension of the IS-LM Neo-Keynesian model. The model considers a small country choosing its exchange rate regime and its financial integration with the global financial market. Analysis is considerably simplified by focusing on polarized binary choices, i.e., credibly fixed exchange rate or pure float, and prefect capital mobility or financial autarky.[2] This hypothesis has been widely taught and recognized since it is quite intuitive and helpful to understand the constraints policy makers must face in an open economy setting.

Theory tells us that each one of the three trilemma policy choices can be a double-edged sword, which should explain the wide and mixed variety of empirical findings on each of the three policy choices. Significant recent literature recognized these issues.[3] To make the matter more complicated, while there are three ways of pairing two out of the three policies, the effect of each policy choice can differ depending on what the other policy choice it is paired with. For example, exchange rate stability can be more destabilizing when it is paired with financial openness while it can be stabilizing if paired with greater monetary autonomy. Hence, it may be worthwhile to empirically analyze the three types of policy combinations in a comprehensive and systematic manner.

Furthermore, countries rarely face the stark polarized binary choices envisioned by the original trilemma. Instead, countries operate in the range of the 'generalized trilemma configuration' – partial financial integration, controlled exchange rate flexibility, and a degree of monetary independence. Understanding these mixed regimes remains a challenge, as there is no unique way to define and measure the degree the three trilemma variables. Proper modeling of limited financial integration and limited substitutability of assets and testing the trilemma in a generalized or systematic manner have been still work in progress. Yet, even in this murky situation, the trilemma remains a potent paradigm since policy makers are challenged by the scarcity of independent policy instruments.

Aizenman, Chinn, and Ito (2008, 2010, 2011) developed a set of the "trilemma indexes" that measure the degree of achievement in each of the three policy choices for a wide coverage of countries and years. They measure the degree to which each of the three policy choices is implemented by economies for more than 170 economies for 1970 through 2007.[4] The monetary independence index (*MI*) is based on the correlation of a country's interest rates with the base country's interest rate. The index for exchange rate stability (*ERS*) is an invert of exchange rate volatility, i.e., standard deviations of the monthly rate of depreciation, using the exchange rate between the home and base economies. The degree of financial integration is measured with the Chinn–Ito (2006), Chinn–Ito (2008) capital controls index (*KAOPEN*).[5]

Using the indexes, they empirically validated that the hypothesis is valid by showing that the three measures of the trilemma are linearly related to each other. In this paper, using the "trilemma indexes" first introduced in Aizenman et al. (2008), we focus on characterizing the policy choices based on the trilemma taken by a group of emerging market economies (EMGs).[6] While developing countries account for more than half of the global GDP, the EMGs – composed mostly of middle- to high-income countries (but excluding traditional industrialized countries) with high degrees of trade, and sometimes financial, openness – account for 40% of the global population and have been growing at a much faster rate than the industrialized countries or other non-emerging market developing

[2] For overview of Mundell's works see The *Prize* in Economics 1999 – Press Release (http://www.nobelprize.org/nobel_prizes/economics/laureates/1999/press.html) or Mundell (1961, 1963). See Aizenman (2011) for overview of the research dealing with the trilemma.

[3] As for monetary independence, refer to Obstfeld, Shambaugh, and Taylor (2005) and Frankel, Schmukler, and Serven (2004). On the impact of the exchange rate regime, refer to Ghosh, Gulde, and Ostry (1997), Levy-Yeyati and Sturzenegger (2003), and Eichengreen and Leblang (2003). The empirical literature on the effect of financial liberalization is surveyed by Edison, Klein, Ricci, and Sløk (2002), Henry (2006), Kose, Prasad, Rogoff, and Wei (2006), Prasad, Rogoff, Wei, and Kose (2003), and Prasad and Rajan (2008).

[4] The data are now updated to 2010. The indexes are available at http://web.pdx.edu/~ito/trilemma_indexes.htm.

[5] Refer to Appendix A for the details of construction of the indexes. The methodology outlined in these papers has been applied and extended to several studies, including Hutchison, Sengupta, and Singh (2012), Cortuk and Singh (2011), and Popper, Mandilaras, and Bird (2011).

[6] The emerging market countries (EMGs) are defined as the countries classified as either emerging or frontier during the period of 1980–1997 by the International Financial Corporation plus Hong Kong and Singapore.

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