17 EMPIRICAL ANALYSES OF EXCHANGE RATE ARRANGEMENTS: A SEARCH FOR CURRENCY AREAS*
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17.1 INTRODUCTION
This paper quantitatively examines exchange rate policies of all IMF members since 1970, especially since the end of the Bretton Woods fixed exchange rate regime. We pay particular attention to the role played by the world's major currencies, i.e., the US dollar, Deutsche mark, French franc, UK pound, Japanese yen, SDR, and ECU as a nominal anchor for other countries' exchange rate stabilization.

With few exceptions, until August 1971 when the United States suspended the official convertibility of the US dollar to gold, the exchange rates of IMF member countries had been limited to fluctuate only within a narrow margin (±1%) around the par values in terms of gold or the US dollar. Soon after the suspension of dollar to gold convertibility, the fixed exchange rate regime began unraveling in the industrialized world. In the Spring of 1973, the European Community countries severed the link between their currencies and the US dollar, Japan decided not to support the Smithsonian central rate, and the international monetary system entered a new era called the "generalized floating" system. To avoid greater exchange rate volatility, many developing countries continued to peg (or stabilize) their exchange rates to the major industrialized countries' currencies, and several Western European countries con-

*Interested readers can obtain the tables referred in the text from the authors
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continued to limit their exchange rates within narrow margins. The latter attempt included the formation of the “snake” among Belgium, Denmark, Germany, Luxembourg, the Netherlands, and Norway in 1972, which eventually led to the establishment of the European Monetary System in 1979.

In the era of “generalized floating,” currencies of the major industrialized countries continue to play a significant role as a nominal anchor to which other countries stabilize their exchange rates. In the Bretton Woods period, the US dollar and the UK pound were dominant anchor currencies, while it is often claimed that the Deutsche mark and, to a limited extent, the Japanese yen have recently risen to nominal anchor currency status. This claim supports the view that a multipolar international monetary system is emerging centered on the economic might of the largest countries of the world, that is, the United States, the European Union, and Japan.

Studies on the search for currency blocs by Frankel and Wei [1993, 1994, 1995] examined the roles of the US dollar, Deutsche mark, and Japanese yen as potential nominal anchor currencies, using a selected sample of countries. They found that while the US dollar and the Deutsche mark are dominant nominal anchor currencies in their respective regions, i.e., the Western Hemisphere and Western Europe, the Japanese yen is not at all dominant in Asia; rather the US dollar is a dominant nominal anchor in Asia. In this paper we examine statistically exchange rate arrangements of all IMF member countries and extend the scope of studies by Frankel and Wei. As a potential nominal anchor, we focus on currencies of the major industrialized countries, important currency baskets such as the SDR and ECU, and currencies of potentially relevant, but relatively minor countries to present a comprehensive picture of the role of the world’s major currencies and country-specific minor currencies.

The paper is organized as follows. Section II briefly explains changes in reported exchange rate arrangements of IMF member countries. Section III examines patterns of the standard deviation of monthly rates of change (measured by first differences in natural logarithms) in exchange rates vis-à-vis the major G-5 currencies, the SDR, ECU, and other relatively minor or regional currencies. A currency is a good candidate as a nominal anchor if any given country’s exchange rate exhibits the smallest volatility, measured by the standard deviation, vis-à-vis this particular currency, and if the magnitude of volatility itself is small and close to zero. Section IV presents a regression analysis of the Frankel and Wei type, where the log first difference in a country’s exchange rate (expressed in terms of the Swiss franc) is regressed on the log first differences in the exchange rates of the G-5 currencies, currency baskets, and other relatively minor currencies (all measured vis-à-vis the Swiss franc). The coefficients which are estimated to be statistically significant are interpreted to represent weights assigned by the authorities to the corresponding currencies for their exchange rate stabilization. Section V calculates the economic size of

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2 Among these countries, only Belgium, Denmark, Germany, Luxembourg, the Netherlands, and Norway were stable members of the “snake.” France often left and rejoined the “snake.”