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Journal of Development Economics 78 (2005) 49–59

JOURNAL OF
Development
ECONOMICS

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Testing for trends in the terms of trade between primary commodities and manufactured goods

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Accepted 1 August 2004

Abstract

This paper joins the statistical debate on the terms of trade between primary commodities and manufactured goods by contributing to the methodological discussion and presenting new evidence using data series covering almost the whole of the 20th century. Using statistical tests that take into account breaks in the series, it is found that over the 20th century the relative prices of primary commodities dropped to nearly one-third of their level at the beginning of the century in two “installments”, when random shocks led to structural breaks, and not in a gradual way as implied by either a deterministic or stochastic trend. Possible reasons for the structural breaks and their policy implications are discussed.

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JEL classification: F14; O19

Keywords: Primary commodities; Terms of trade; Structural breaks

1. Introduction

Since [Prebisch \(1950\)](#) and [Singer \(1950\)](#) challenged the maintained view by classical economists of improving terms of trade of primary commodities relative to manufactured goods, and suggested instead a secular deterioration, research on this subject has been thriving. A variety of empirical results have been obtained so far, which are capable of

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supporting conflicting views. According to the list of the most important studies on the terms of trade issue, which was originally compiled by [Nguyen \(1981\)](#) and extended by [Diakosavvas and Scandizzo \(1991\)](#), neither side of the controversy can claim victory. The results obtained on secular trends differ according to the period explored, the definitions used and the estimation techniques employed. From the studies included in this list, about one-third confirm the Prebisch–Singer hypothesis and one fourth disprove it.

The basic task in these studies was to prove, or disprove, the existence of a time trend in the data. In the cases that this is confirmed, economic forces exist which ‘push’ the terms of trade to follow a continuously improving or worsening deterministic course, with deviations from it being temporary. However, the predominant movement of a series over time in one direction may also be due to certain shocks that have permanent effects on the series, either in the form of a stochastic trend or of structural break(s).

The separation of trends from structural breaks in the series requires carefully designed tests. This task is pursued in this paper for the case of commodity terms of trade using a data set covering almost the whole 20th century (1900–1998). This data set is probably the best that exists on this issue, and was developed at the World Bank by [Grilli and Yang \(1988\)](#) for the period 1900–1986 and extended to 1998 at the IMF. The original GY data set (1900–1986) has so far been used by researchers, including the compilers themselves, in order to provide more accurate evidence on the evolution of the primary commodity terms of trade. The compilers of the original data set, using the ‘traditional’ approach confirm the existence of a negative time trend in the relative primary commodity prices, which is implicit in the works of Prebisch and Singer.

Among the other researchers who used the GY data set, [Cuddington and Urzua \(1989\)](#) [CU] introduced the distinction between deterministic and stochastic trends as well as the confounding effects of possible structural breaks when conducting unit root tests. CU suggested the existence of a structural break in 1920. [Powell \(1991\)](#), also, recognized the possibility of structural shifts in the terms of trade series and suggested three breaks, one in 1920 and two more at later dates. In both papers the timing of the shifts is selected in an ad hoc manner, while Powell, in addition, uses test statistics that do not take the shifts into account and the shift variables are arbitrarily constructed not allowing the measurement of the impact of the different structural breaks.

In comparison to previous researchers, this paper: first, uses an extended GY data set covering almost the whole 20th century. Second, endogenizes the search for structural breaks. Third, uses more appropriate and more powerful tests for breaks. More specifically, the Lumsdaine–Papell unit root test is used which tests for the presence of two structural breaks at the same time. In this way, testing for trends in the commodity terms of trade leads to some very interesting results about the way the commodity terms of trade evolve over time and which has totally different policy implications than those of a deterministic or stochastic trend.

2. The data set and the testing procedure

The GY series of the commodities terms of trade (COMTT) are the ratio of an index of non-fuel commodity prices (COM) and a price index of manufactures (MUV). COM is an

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