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Journal of Development Economics 77 (2005) 125–152

JOURNAL OF Development ECONOMICS

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Trade, capital accumulation and structural unemployment: an empirical study of the Singapore economy ☆

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Received 1 August 2002; accepted 1 March 2004

Abstract

This paper studies the factors responsible for the secular decline of Singapore's unemployment rate over the period 1966-2000 in an environment of low and stable inflation rates. We introduce wage bargaining and unions into a specific-factors, two-sector economy with an export sector and a non-tradable sector to obtain an endogenous natural unemployment rate. Increases in the relative export price and capital stock in the export sector are predicted to reduce structural unemployment. These hypotheses could not be rejected based on structural estimations and co-

☆ The authors thank the two anonymous referees for their detailed comments on an earlier draft of this paper. They are also grateful to Marcelo Olarreaga, David Tarr, and seminar participants at the University of California at Davis and the World Bank for their useful comments. Lin Yeok Tan provided useful guidance on empirical matters in the early stage of this project for which the authors are very grateful. They also acknowledge the financial support given by the Singapore Management University under its research collaboration scheme. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors, and do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

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doi:10.1016/j.jdeveco.2004.03.003

integration regressions. Empirically, capital accumulation in the export sector explains most of the decline in Singapore's unemployment rate.

JEL classification: E24; F12; J51
Keywords: Endogenous natural rate of unemployment; Wage bargaining; Specific-factors model; Stolper-Samuelson effect; Rybczynski effect

1. Introduction

Prior to the seminal papers by Friedman (1968) and Phelps (1968), which introduced the expectations-augmented Phillips curve and the concept of the natural rate of unemployment, it was commonly held that a policy maker could use fiscal and monetary stimulus to keep the economy at a permanently low rate of unemployment as long as it was willing to tolerate a high enough rate of inflation. Friedman and Phelps, however, argued that the actual unemployment rate could remain below a certain natural rate only insofar as the monetary authority could generate an actual inflation rate that exceeded the expected rate of inflation. Absent expectation errors, the economy would settle down at the natural rate of unemployment.

That natural or equilibrium structural rate of unemployment was argued to be invariant to monetary changes though not necessarily to real factors. However, there was little understanding about how exactly real factors affected the natural rate. Things changed when several economists, including Phelps himself, were spurred by the phenomenon of a persistent rise of unemployment in Western Europe without unexpected disinflation to begin research into the set of factors determining the natural rate. The non-inflationary structural boom in the U.S., as well as in a number of other OECD economies in the late 1990s, gave further impetus to this research. The result of the research is a set of complementary theories that pinpoint the determinants of the equilibrium structural rate of unemployment: the union bargaining model (McDonald and Solow, 1981; Layard et al., 1991), the efficiency wage model (Shapiro and Stiglitz, 1984), the insider-outsider model (Lindbeck and Snower, 1989), the search and matching model (Pissarides, 2000), intertemporal-equilibrium models (Phelps, 1994), and the social programs and wage instability model (Ljungqvist and Sargent, 1998).[1] Factors that have been highlighted as being relevant in determining the natural rate in these models include demographic factors, social and unemployment insurance programs, minimum wage policies, tax structure, productivity growth, and capital accumulation. In addition, Hoon (2000, 2001) explicitly argue that the path of equilibrium unemployment rate can be shifted by various forces acting on economies that are interlinked via the international trading system.

On the empirical front, although Staiger et al. (1997) points out that estimates of the natural rate of unemployment tend to be imprecise, there have been several recent studies that attempt to estimate the natural rate of unemployment as well as test the natural rate hypothesis. Gordon (1997) estimates a time path of the natural rate for the U.S. from

[1] See Phelps and Zoega (1998) and Salemi (1999) for a review of the literature.