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Option pricing and foreign investment under political risk

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Abstract

The paper analyses asset prices in a context of uncertainty over future government policy. As current policy is maintained, perceived risk abates thus leading to a gradual appreciation of asset prices and a gradual decrease in their conditional variance. Option values computed under this process have time series and the term structure of conditional volatility, which, in general, are downward sloping. In price series without a policy reversal, implied volatility from option prices will exceed actual volatility, with this wedge progressively disappearing. This may be viewed as the volatility analogue of the ‘peso premium’ for assets subject to large, infrequent price drops. © 2001 Elsevier Science B.V. All rights reserved.

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JEL classification: F30; G12

1. Introduction

In recent years, the emphasis on the financing of development has shifted from debt to equity and from governments to the private sector. A remarkable rise in foreign direct investment has taken place in reforming economies, at first tentatively and then progressively accelerating, until the recent crisis.

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The time path of foreign direct investment is quite comparable across countries. The initial flows were small, accelerating over time, reflecting high ex post profitability of early experiences, and leading into a dramatic climb at a late stage. Fig. 1 describes the time series of foreign direct investment capital committed to the People's Republic of China between 1983 and 1998.

This gradual buildup, mirrored in the time pattern of returns on the local capital markets, is consistent with various explanations. A simple argument has to do with logistics: it takes time to train and build capacity. However, this simple explanation cannot account for the parallel progressive acceleration in portfolio flows. Investment delays may arise because there is value in waiting to invest when some fundamental uncertainty is resolved only over time (see McDonald and Siegel, 1986). Another explanation is that learning about local productivity takes place sequentially (e.g., Chamley and Gale, 1994; Thimann and Thum, 1998). The latter two explanations raise the question of what is the source of local uncertainty, and how this 'learning hypothesis' may be tested against models without a gradual resolution of uncertainty.¹

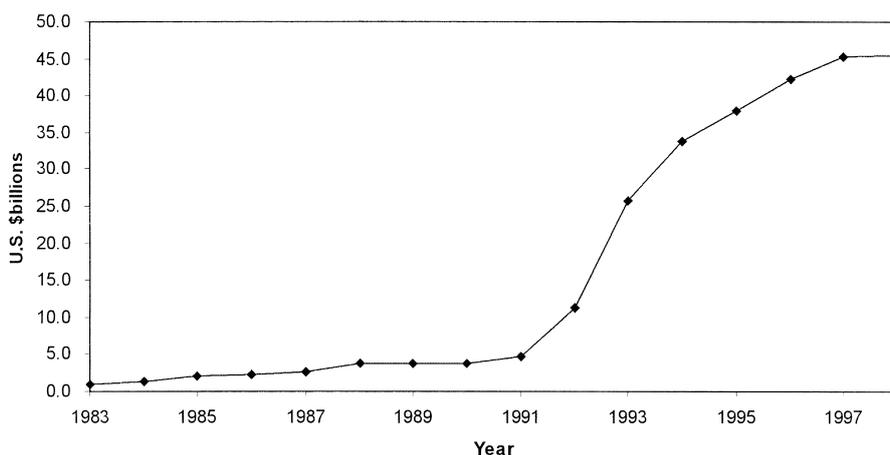


Fig. 1. Foreign direct investment in China from all sources (1983–1998). In U.S. \$billions: 1983–\$0.9b; 1984–\$1.4b; 1985–\$2.0b; 1986–\$2.2b; 1987–\$2.6b; 1988–\$3.7b; 1989–\$3.8b; 1990–\$3.8b; 1991–\$4.7b; 1992–\$11.3b; 1993–\$25.8b; 1994–\$33.8b; 1995–\$38.0b; 1996–\$42.4b; 1997–\$45.3b; 1998–\$45.6b. (Source: China in the World Economy, Nicholas R. Lardy, 1994, Institute for International Economics and UNCTAD, Division of Transnational Corporations and Investments (Wall Street Journal, June 5, 1996, page A2), and China Ministry of Foreign Trade & Economic Cooperation.

¹An example is the approach taken by Thomas and Worrall (1994), who argue that gradual investment is the result of strategic interaction in the face of expropriation risk, assuming complete certainty and coordination among investors.

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