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Analysis of foreign investment impact on the dynamics of national capitalization structure: A computational intelligence approach

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Abstract

Central and Eastern Europe countries are in the political and economic transitional process of merging with the European Union. How has foreign investment already transformed these countries' economic sectors and how will it affect the national economies in terms of capitalization across economic sectors in the near future? Our prime consideration is portfolio investment impact on the dynamics of respective countries' capitalization structure in terms of sectorial investment distribution. The proposed method rests on the artificial intelligence approach (neural network method), which is targeted to grasp non-linear dynamics of heterogeneous foreign investment impact on national capitalization structure.

JEL classification: C31; C45; F21

Keywords: Foreign portfolio investment; Foreign direct investment; Capitalization structure; Computational intelligence; Neural networks

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1. Introduction

The theme has been chosen in response to an increasing demand from the investment community for national versus global economic sector analysis. Although a global trend, sector investing has become particularly popular in Europe, partly due to the creation of EMU which has resulted in a significant reduction in trade barriers, together with the increase in M&A activity. The research conducted by Merrill Lynch/Gallup (Morgan Stanley Dean Witter & Co, 2004) has shown that in Europe, 63% of funds are now allocated on a sector basis, up from 22% in 1997. While sector investing is more mature in Europe, we also see substantially increasing use of sector investing and analysis in the US and Asia Pacific.

This paper aims to investigate investment inflows to the Eastern Europe region. Since the late 1990s, a fundamental shift has occurred in the pattern of private sector financial flows to developing countries. Debt flows have fallen sharply, while equity flows – mainly in the form of foreign direct investment – have remained comparatively robust. This shift from debt to equity should diminish the volatility of developing countries' external finance and improve their access to technology, markets, and management expertise. However, much more needs to be done to put finance development on a stable basis. The decline in debt flows, coupled with weak export revenues, has placed enormous pressure on the middle-income, highly indebted countries (Aykut et al., 2003).

In recent years, Multilateral Investment Agreement (MIA) directly influences dynamics of national capitalization structure. MIA proposed by the EC in the WTO (2001) aims at eliminating all flexibility which a country may have at present to permit foreign investment and allocate FDI to priority sectors; to discourage or stop altogether the flow of foreign investments in sectors where such investment is not considered desirable or appropriate; to provide special preferences for domestic investment and stipulate conditions for FDI, like ceiling on equity, restrictions on ownership and so on (Aykut et al., 2003). Investors will thus have freedom without any responsibility, except in respect of their own profits. The implementation of the obligations of governments is sought to be ensured by locating the MIA in the WTO, so that for any perceived infringement, actions can be taken against exports of the country. Some industrialized countries are pressing for a multilateral discipline. The main reason is that they want to eliminate or, at least, constrict the powers of host governments regarding the choice of the priority sectors for FDI and the imposition of conditions on such investments, so that foreign investors are able to operate unencumbered by such constraints.

These and many other economic policy matters constitute nowadays investment actualities. Meanwhile, our primary concern here is not about investment policies, but rather about narrow technical aspects of sectorial investment analyses. Many researches are concerned about the appropriateness of traditional research methods in the today's complex environment (Winston, 2004). This paper also provides insights and an overview for employment of the computational intelligence approach (CIA: computational intelligence approach has been applied using two types of neural networks architectures; MLP: backpropagation multilayer perceptron net for learning and SOM: self-organizing maps for clustering), which helps to shed new light on the heterogeneous nature of investment dynamics. We hereinafter propose interdisciplinary approach, which embraces finance theory, econometric and computational intelligence methods. The focus of this paper is on evaluating how computational