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Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf



The impact of foreign stock markets on macroeconomic dynamics in open economies: A structural estimation

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A B S T R A C T

JEL classification:

C11
E32
E44
E52
F36
F41

Keywords:

Stock market
Wealth effect
International portfolio holdings
Bayesian estimation
Adaptive learning
Open economy
Expectations

With the increased international financial integration in recent years, bilateral financial linkages between countries may have a growing influence on their real economies. This paper employs a structural two-country New Keynesian model, which incorporates a cross-border wealth channel, to estimate the effect that foreign stock market fluctuations may have on macroeconomic variables in open economy countries.

The model is estimated using Bayesian methods on a sample of open economies that can potentially be affected by changes in a larger foreign stock market: Australia, Canada, New Zealand, Ireland, Austria, and the Netherlands. The estimation allows for deviations from rational expectations and for learning by economic agents.

The empirical results indicate important cross-country wealth effects for Ireland and Austria, from fluctuations in the U.S. and U.K. and in the U.S. and German stock markets, respectively; the wealth effect is largest in Ireland. The data favor, instead, specifications with no significant wealth effect for the remaining countries. Foreign stock price fluctuations, however, still play a role by affecting domestic expectations about future output gaps in all countries in the sample.

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1. Introduction

The past two decades have been characterized by a substantial increase in international financial integration. Lane and Milesi-Ferretti (2001, 2003, 2007, 2008) extensively document the rapid growth over the past years in the external wealth held by most countries: they show, for example, that the stock of external assets and liabilities as a fraction of GDP has risen by a factor of seven over the 1970–2004 period in industrial countries. During the same period, the share of equities in their external wealth has also increased and the home bias in equity holdings has become less severe for several countries (e.g., Sorensen et al., 2007; Baele et al., 2007).

As a consequence, bilateral financial linkages between countries may matter more than they did in the past. Those economies in which a large fraction of wealth is invested in foreign equities, for example, may be affected by fluctuations in stock prices in a foreign financial market. A cross-border wealth effect from changes in international stock prices may hence have an important impact on open economies' aggregate consumption and real activity.

Several studies have analyzed the wealth channel in a closed-economy framework, from early work by Ando and Modigliani (1963) to more recent contributions.¹ The majority of studies focus on the U.S., but similar regressions have been estimated for a variety of countries.²

The potential effects of fluctuations in international asset prices on domestic economies, instead, have not been widely researched yet. This paper tries to fill this gap by estimating the magnitude of the international wealth effect for a set of open economies.

It does so by estimating a structural model, which follows Di Giorgio and Nisticó (2007), for a two-country open economy, extended to incorporate an international wealth channel. The magnitude of the wealth channel depends on the length of the planning horizon agents use in forming their financial decisions and on the degree of financial openness. In the model, current output is affected by expectations of future output, real interest rates, and the terms of trade, but also by swings in foreign stock prices.

The model is estimated for a set of open economies – Australia, Canada, New Zealand, Ireland, Austria, and the Netherlands – which are thought to be potentially affected by one or more foreign stock markets. The ideal country in the estimation, i.e. one that most closely conforms to the theoretical model, would be an open economy that lacks an important domestic stock market, but which is characterized by a large fraction of residents that invest in equities, mainly abroad. None of the countries, with the possible exception of Ireland, is a flawless candidate; considering all of them, therefore, is important to interpret the results and to assess which factors may affect the size of wealth effects.

Most of the wealth that is invested abroad is typically directed to the U.S. Therefore, the U.S. stock market will usually represent the relevant foreign stock market to be considered in the estimation. But in some cases, financial markets situated in other countries (in the U.K. for Ireland, in the U.K. and Australia for New Zealand, and in Germany for Austria) also matter and they will be taken into account in the empirical analysis.

The models are estimated by likelihood-based Bayesian methods as in Milani (2007, 2008). In the estimation, the assumption of rational expectations is relaxed in favor of learning by economic agents. This is motivated by the necessity to induce the needed persistence in the model (as an alternative to assume habit formation in consumption and inflation indexation in price-setting), but especially by the results in Milani (2008), which shows that asset prices may play a large role through their influence on expectations about future real activity. The paper considers an explicit model of expectations formation, which allows me to disentangle the direct effect of asset prices on output from the indirect effect through expectations.

¹ Poterba (2000) and Davis and Palumbo (2001) offer overviews of the literature. Several papers estimate time series regressions on aggregate data with or without cointegrating relationships. Lettau and Ludvigson (2004) is a recent influential study that tries to quantify the wealth effect by separating between transitory and permanent innovations in wealth and consumption spending and finds a smaller effect than previously thought. Castelnovo and Nisticó (2009) and Milani (2008), instead, estimate the size of the wealth effect in a theoretical closed-economy model to control for general equilibrium effects.

² E.g., Pichette and Tremblay (2003) estimate the wealth effect for Canada, Sierminska and Takhtamanova (2007) for Canada, Finland, and Italy. Funke (2004) for a sample of emerging countries, while Altissimo et al. (2005) provide a survey of several single-country estimates.

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