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Financial integration and consumption risk sharing and smoothing

Yui Suzuki *

School of Diplomacy and International Relations, Seton Hall University, USA

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ABSTRACT

While paying careful attention to the stochastic properties of income process, this paper tests the joint rational expectation and permanent income hypothesis (RE/PIH) to clarify how and to what degree financial integration delinks national income and consumption. It is shown that both the OECD and the non-OECD countries benefit from financial integration in terms of consumption risk sharing and smoothing. The RE/PIH for the transitory income is not rejected for the OECD countries suggesting full consumption smoothing. Regression results also support the RE/PIH prediction that financial integration delivers even larger increases in consumption responding to positive shocks to income growth.

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1. Introduction

Theoretical models in open economy macroeconomics and international finance render clear predictions about the benefit of financial integration in terms of consumption risk sharing and smoothing. In the typical dynamic stochastic general equilibrium (DSGE) models, trade in financial assets delinks national consumption levels from the country-specific component of output fluctuations, which reduces the volatility of consumption relative to output and income (e.g. Backus, Kehoe, & Kydland, 1992; Mendoza, 1991). Although somewhat lower degrees of risk sharing and smoothing can be generated by introducing transaction costs in the international financial markets and/or non-tradable and durable goods and services, they do not reverse the theoretical prediction of the lower relative volatility of consumption. Although there are debates about larger or smaller potential welfare gain to international risk sharing,[1] the theoretical prediction of the reduced relative consumption volatility through international financial integration has been quite robust in numerical simulations.

Nevertheless, empirical facts reported in Kose, Prasad, and Terrones (2003) cast some doubt on this benefit of financial integration in terms of consumption risk sharing and smoothing. They point out that the median of the ratio of the volatility of

* School of Diplomacy and International Relations, Seton Hall University, 400 South Orange Avenue, South Orange, NJ 07079, USA. Tel.: +1 973 275 2215; fax: +1 973 275 2519.
E-mail address: yui.suzuki@shu.edu.

[1] Estimates of the gains to international risk sharing based upon stock returns tend to find dramatically higher gains than do estimates from consumption-based models (Lewis, 2000).

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total consumption to that of income has risen from the 1980s to the 1990s in more financially integrated economies (MFIEs), precisely in the period when financial integration should have paid off in offering better opportunities to alleviate country-specific shocks. Furthermore, they document that, although gross capital flows surged after the mid-1980s, industrial countries experienced virtually no major change in their average relative volatility over time since the 1970s. These findings run counter to the notion that financial integration yields opportunities of consumption risk sharing and smoothing and beg the question against the capacity of international financial markets in providing better opportunities to attenuate country-specific shocks. Note that, since the relative volatility is used as a measure of the efficacy of consumption smoothing, these puzzling patterns are hardly explained away as just a consequence of boom and bust cycles possibly fomented by financial integration.[2] In fact, Kose et al. (2003) conclude that the benefit of international financial integration in terms of improved consumption risk sharing and smoothing accrues only beyond a certain threshold.

I hypothesize that the observed lack of reduction in the relative consumption volatility under international financial integration is reconciled after careful deliberation on the types of income shock and process. The documented patterns of the relative volatility of consumption to income are puzzling at a glance because they contradict the typical prediction of consumption risk sharing and smoothing for transitory and random walk shocks. Consumption smoothing pertains to the rational expectation and permanent income hypothesis (RE/PIH) in which consumption is smoothed intertemporally ex post by international lending and borrowing, bringing down the response of consumption to income shocks too. Moreover, volatility of consumption will be reduced when country-specific shocks are hedged ex ante by exchanging contingent assets, tapering off the response of consumption to income shocks. Nevertheless, while the RE/PIH points to consumption smoothing for a standard mean-reverting income process, it does predict the opposite—larger adjustments in consumption than contemporaneous changes in income—and thus points to higher volatility of consumption, when income growths are positively autocorrelated. The RE/PIH prediction on the volatility of consumption indeed hinges on the underlying types of income shock and process.

With this conjecture in mind, this article empirically explores how international financial integration provides consumption risk sharing and smoothing opportunities and reconciles observed lack of decreased volatility of consumption under financial integration. The goals are to investigate whether and to what extent countries are subject to credit constraints and to clarify how and to what degree international financial integration delinks national income and consumption after accounting for the stochastic properties of income process. Specifically, I conduct a joint test of the RE/PIH, which is developed by Flavin (1981) and then extended by Elwood (1998) who argues that the specification of the income process is crucial. By explicitly considering multiple components of income which follow different processes, I will disentangle respective adjustment patterns of consumption responding to various types of income shocks and changes. To be more specific, the empirical results show whether and to what extent consumption responds to three types of income shocks: the slope shock (the shock to income growth), the level shock (the random walk shock to the income level), and the transitory shock, as well as the predictable changes in the permanent and transitory components of income. Furthermore, I probe how such responses are altered when countries become more integrated to the international financial markets.

Contrary to what we observe in the full sample countries case, the RE/PIH for the transitory income is not rejected for the OECD and the EU countries, suggesting full consumption smoothing and absence of excess sensitivity. Furthermore, I show the evidence that not only the OECD but also the non-OECD countries benefit from international financial integration in terms of coping with the income shocks. In particular, regression results support the RE/PIH prediction that financial integration delivers even larger adjustments in consumption in response to positive shocks to income growth, which can reconcile the puzzle of higher relative volatility of consumption pointed out by Kose et al. (2003). Moreover, smaller adjustments in consumption responding to permanent shocks to the income level in more integrated countries suggest that countries are insured for idiosyncratic country-specific level shocks through cross-holding of equities and securities.

This paper relates to a vast number of preceding empirical literature discussing the lack of international consumption risk sharing and smoothing.[3] It is typically concluded that the fruits of better consumption risk sharing are, at best, limited to the developed countries and little evidence of the gains in the developing countries has been found. Lewis (1996) argues that not only capital market restrictions but also the nonseparability between tradables and nontradables are required to explain lack of consumption risk sharing. More recently, Artis and Hoffmann (2008) illustrate that the OECD countries have become more insured against permanent shocks; however, basic measures of risk sharing have not picked up this change because of the great moderation and synchronization of the business cycles. Bekaert, Harvey, and Lundblad (2006) show that equity market liberalization and capital account openness are associated with declines in consumption growth volatility suggesting improved risk sharing; however, such results are weaker for the liberalizing emerging markets. Kose, Prasad, and Terrones (2007) argue that the developed countries have come to deal with income shocks better during the recent period of globalization, while the developing countries have been shut out of this benefit. On the other hand, Sørensen and Yosha (1998), applying risk sharing regression proposed by Asdrubali, Sørensen, and Yosha (1996), quantify that only 40% of shocks to GDP are insured in the European and the OECD countries. Bai and Zhang (2012) argue that there have been no substantial improvements in the degree of international risk sharing in the last two decades, even in the developed countries. These findings are perplexing when we recall recent rapid enhancement in the cross border transactions of financial assets and the potentially large welfare gains through financial integration. In regard to such discrepancy, this study contributes to the debates by

[2] And in fact, as it is presented in Ćorić and Pugh (2013), the decades preceding the recent financial crisis and global downturn were a period of unusually mild output volatility for many developed and developing market economies.

[3] Backus et al. (1992) point out that consumption correlations observed in the data are too low to be explained by a standard DSGE model with complete markets (the quantity anomaly).

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