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Keeping up with the Joneses and exchange rate volatility in a Redux model

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ABSTRACT

By incorporating a keeping-up-with-the-Joneses preference into the Redux model, this paper sketches the implications of consumption externalities for the short-run and long-run equilibria. We show that the size of the consumption externality plays a crucial role in terms of affecting the long-run and short-run effects of important economic variables. Keeping-up-with-the-Joneses in relation to domestic benchmark consumption has the effect of magnifying the impact of monetary shocks on the exchange rate. Besides, simple numerical analyses show that the exchange rate volatility is raised (reduced) by an increasing rate as the size of the externality in regard to domestic (foreign) consumption increases.

1. Introduction

The seminal paper by Obstfeld and Rogoff (1995, 1996) initiated a new line of research and an exponentially growing literature that is commonly referred to as the "New Open Economy Macroeconomics (NOEM)." The so-called Redux model provides a major conceptual advance in exploring the exchange rate dynamics and the international transmission mechanism of fiscal and monetary policy by applying a fully-functioning intertemporal general equilibrium model with "nominal rigidity" in the presence of "monopolistic competition." These two salient characteristics alter the international transmission mechanism for shocks and also provide a more potent role for monetary policy. Since Obstfeld and Rogoff (1995) effectively launched this new research approach, a large number of studies have used the Redux model to re-address the positive questions, such as exchange rate dynamics, that were asked of the Mundell–Fleming models. One of the most important extensions has been to allow for pricing-to-market, which is contributed by Betts and Devereux (1996, 2000), who explore the implications of pricing-to-market for real and nominal exchange rate variability and the international transmission of monetary shocks.[1] By following this strand of the literature, this paper attempts to explore the role played by a social comparison in a Redux model.

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[1] Alternative sources of nominal rigidity, home bias, the elasticities of substitution between different varieties of goods (derived from various utility functional specifications), and financial structure all play a role in terms of affecting exchange rate dynamics. See Lane (2001) or Fendel (2002) for a comprehensive survey of the literature.

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The ideas about social comparisons in consumption have a very long history in economics, dating back to Veblen (1899). The comparisons in consumption choices postulate that individuals derive utility not only from the level of their own consumption but also from the consumption of the society, i.e. a consumption externality. The consumption externality has been identified as one important motive underlying human behavior. Furthermore, it has also been widely applied to macroeconomics- and finance-related issues.[2] In the literature, "keeping up with the Joneses" has been viewed as one of the most important consumption externalities. It indicates that an individual may evaluate his/her own consumption relative to that of others and to keep up with others, by definition, the individual's marginal utility derived from an additional unit of consumption increases with the current level of average consumption in the society. That is, such a consumption externality influences the agents' consumption behavior by altering their marginal utility of consumption. In a Redux model, exchange rate volatility is related to the consumption elasticity of money demand (Betts & Devereux, 2000), and the decision to hold money involves an opportunity cost that crucially depends on the marginal utility of consumption (Obstfeld & Rogoff, 1995). Given that keeping up with the Joneses alters individuals' marginal utility, some questions naturally arise in relation to the circumstances. What is the role played by keeping up with the Joneses in terms of the household's decision to hold money? What is the relationship between the consumption externality and exchange rate variability? How does it influence the international transmission of policy shocks?

Surprisingly, while the consumption externality has been widely studied in many contexts, its implications with respect to exchange rate determination and monetary policy transmission have rarely been explored in an international macroeconomic model. The purpose of this study is to do exactly that. We therefore extend the Redux model to embody a keeping-up-with-the-Joneses preference and use it to systematically examine its implications in an open-economy dynamic general equilibrium model. There are related studies in the literature, but our purpose differs from theirs. In a semi-small open economy model, Cardi (2007) introduces a habit-forming behavior on the consumption side and, accordingly, analyzes the macroeconomic consequences of permanent changes in government expenditure on both a domestically-produced and an imported good. Justiniano and Preston (2010) perform a quantitative analysis, showing that habit formation does not increase real exchange rate persistence, even though it does improve the fitting of the model to the data.[3] It should be emphasized that the consumption effect of habit formations is *internal*, rather than *external*, as in our model. In a closely related paper, Pierdzioch (2003) explores the implications of keeping up with the Joneses for the welfare effect. He finds that in the presence of keeping up with the Joneses, an expansive monetary policy can be either a "beggar-thy-neighbor" or a "beggar-thyself" policy. A particular emphasis is that his contribution focuses on the normative analysis, while our study is directed towards the positive analysis.[4]

The main findings of this paper are summarized as follows. First, we show that keeping up with the Joneses in relation to domestic consumption levels gives rise to a "demonstration effect," which induces an individual to not only consume more in each period (due to the marginal utility of consumption being raised), but also to increase the level of consumption over time (due to the marginal rate of substitution of the current consumption for the consumption in the future becoming smaller as the size of the consumption externality increases). In particular, when the consumption externality is more significant, individuals are inclined to reduce their money holdings, given that keeping up with the Joneses increases the marginal utility of consumption and hence the opportunity cost of holding money. Second, we show that in the long run with flexible prices an increase in home government purchases gives rise to a crowding-out effect in terms of a decrease in domestic consumption and a spill-over effect in terms of an increase in foreign consumption. Since the crowding-out effect is magnified by the consumption externality in regard to domestic consumption levels, the world private consumption shrinks dramatically in the presence of keeping up with the Joneses. Nonetheless, the home output expands by less.

Third, with regard to the short-run response under sticky prices, we find that in response to an expansionary monetary policy in the home country, the domestic currency depreciates and the relative change in consumption increases. A novel result is that keeping up with the Joneses in relation to domestic consumption not only magnifies the relative consumption change, but it also increases exchange rate variability at an increasing rate. Since keeping up with the Joneses has the effect of magnifying the impact of monetary shocks on the exchange rate, it increases the ability of monetary shocks to explain the high observed volatility in exchange rates. Finally, in simple numerical analyses, we indicate that the variance of the exchange rate rises by about 3.10%, as the value of the consumption externality to domestic consumption increases from 0 to 0.5 which is in line with Carroll, Overland, and Weil (1997) and Turnovsky and Monteiro (2007). The exchange rate variance further rises by about 5.30% relative to the economy where there is no keeping up with the Joneses, if we follow Carroll, Overland, and Weil (2000) and raise the consumption externality parameter to 0.75.

[2] Consumption externalities are introduced in order to provide a possible explanation for the equity premium puzzle (Abel, 1990; Campbell & Cochrane, 1999; Galí, 1994), and to explore the patterns of growth (Carroll et al., 1997, 2000; Liu & Turnovsky, 2005; Park, 2013; Turnovsky & Monteiro, 2007), the properties of the business cycle (Lettau & Uhlig, 2000), as well as their inefficient consequences (Alonso-Carrera, Caballé, & Raurich, 2004, 2005; Dupor & Liu, 2003; Fisher & Hof, 2000; Shieh, Lai, & Chang, 2000).

[3] Some studies, for instance, Fuhrer (2000) and Amato and Laubach (2004), have pointed out the importance of habit formation in the evaluation of monetary policies and Park (2013) has highlighted habit persistence effects when implementing fiscal policies, but their analyses are confined to a closed economy. Moreover, habit formation is essentially internal (which is taken into account by individuals), being different from the "external" keeping up with the Joneses (which is taken as given). In addition, by incorporating catching up with the Joneses into the Calvo-type and Taylor-type sticky price model paradigms, Jung (2004) explores its business cycle frequency implications. Again, this analysis is restricted to a closed economy.

[4] Recently, the characteristics for keeping up with the Joneses are also extended to some other macroeconomic fields, such as the accumulation of reserves (see Cheung & Sengupta, 2011).