Do imports crowd out domestic consumption? A comparative study of China, Japan and Korea ☆

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ABSTRACT

A decline in the relative price of imported goods compared to that of domestically produced goods, e.g., caused by domestic currency appreciation, may have different effects on domestic consumption. Such effects may not be accurately detected and measured in a classical permanent-income model without considering consumption habit formation as pointed out by Nishiyama (2005). To resolve this problem, this paper employs an extended permanent-income model which encompasses consumption habit formation. Both cointegration analysis and GMM are used to estimate the (modified) intertemporal elasticities of substitution (IES) between imports and domestic consumption and the parameters of habit formation as well as the (modified) intratemporal elasticities of substitution (AES). We find that import and domestic consumptions are complements in China, but substitutes in Japan and Korea. Different per capita incomes and consumer behaviors between China and the other two countries are two possible reasons for different relationships between import and domestic consumptions.

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1. Introduction

Chinese currency (RMB exchange rate) has experienced an appreciation recently, reducing the relative price of imported goods compared to that of domestically produced goods, which may have different effects on domestic consumption. Furthermore, as we know, the relationship between import and domestic consumption will depend on the level of disposable income and consumer preference.[1] Therefore, we choose three countries, China, Japan and Korea for a comparison as these countries have different levels of disposable incomes but similar consumption habit, saving behavior and oriental cultural conditions. Their clear similarities and differences present an excellent case study on the relationship between imports and domestic consumption with an international perspective.

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[1] Consumption power depends on the level of disposable incomes. This implies that if import consumption contains less luxurious goods than domestic consumption, there should be little difference between imported and domestically produced goods, producing more powerful intratemporal substitution effects between import and domestic consumption. On the other hand, Chinese, Japanese and Korean residents have similar consumption habit, such as high savings and reluctance to use credits for excessive consumption. Therefore, through comparing the consumption patterns of consumers in China, Japan and South Korea, it is possible to identify the effect of consumer incomes on the substitution or complementarity relationship between import and domestic consumption, eliminating the habit formation preference factor as far as possible.

A decline in the prices of imported goods (imports) has two counteractive effects on the current demand for domestically produced goods (domestic consumption). First, it raises demand for imported goods and crowds out domestic consumption. This is the so-called intratemporal substitution effect. Second, as imported goods become cheaper, real current income rises, leading to higher domestic consumption in the current period at the expense of future consumption. This is the so-called intertemporal substitution effect or income effect.

Whether the intratemporal and intertemporal effects will lead to a net crowding out of domestic consumption will depend on the relative sizes of the intratemporal elasticity of substitution (AES, hereafter for convenience) and the intertemporal elasticity of substitution (IES, hereafter for convenience) of domestic consumption. [2] If AES is larger than IES, a decline in the prices of imported goods will reduce domestic consumption, or vice versa. It is worth noting that a decline in the relative prices of imported goods vis-a-vis domestically produced goods can be caused by domestic currency appreciation. As a result, the empirical results from this study will have some useful implications on foreign exchange policy or other price reforms.

Some empirical studies have investigated IES of both imports and domestic consumption in a rational framework based on a Life Cycle/Permanent Income Model (LCPIM). Ceglowski (1991), for example, investigates the role of intertemporal substitution in US import demand using a model of import consumption based on LCPIM, and estimates the intertemporal elasticity for imports to be about 0.8, while the implied relative price elasticity of import consumption to be about 1. These results indicate that import consumption may respond to changes in their intertemporal prices, as well as changes in their price relative to that of domestic substitutes.

Clarida (1994) employs a simple rational-expectation permanent-income model to derive a structural econometric specification of demand for imported consumer goods. He estimates the average long-run price elasticity of import demand to be −0.95 using a cointegrating approach. The average elasticity of import demand with respect to a permanent increase in real spending was 2.15. Amano and Wirjanto (1996) examine the importance of intertemporal substitution in US import consumption using a model of permanent income that allows for random preference shocks and additive separability of a utility function. Using a cointegration approach, they show that IES for domestic and import consumption were 0.6 and 0.9, respectively. Using the GMM approach, the estimated IES were 1.4 and 4.3, respectively. However, the J-test tends to reject the model which indicates that IES estimated from GMM appears implausible. The empirical results show that IES estimated from intratemporal optimality condition and from Euler equations are hardly equal.

Nishiyama (2005) argues that, the existence of heterogenous agents, the rich and the poor, and habit formation in the economy seem to explain this empirical dilemma. On the other hand, Muellbauer (1988), Eichenbaum, Hansen, and Singleton (1988), Ferson and Constantinides (1991), Ogaki and Park (1997) and Croix and Urbain (1998) all find that habit formation helps to account for consumption dynamics and explains why empirical data frequently reject the life cycle hypothesis.

Habit formation is one form of time-non-separability, which means that the level of consumption is easy to be adjusted upward, but difficult to be adjusted downward. Just like the ancient Chinese proverb "it's easier to go from rags to riches than riches to rags". The idea of introducing habit formation into the utility function can date back to Duesenberry (1949). He assumes that utility in each period not only depends on current consumption, but also on past consumption. Therefore, habit formation can measure the change of consumption on the utility, and describe the irreversibleness of consumption.

Croix and Urbain (1998) extend previous work done by Clarida (1994) and Ceglowski (1991) by considering a two-good version of the lifecycle model introducing time-non-separability in household's preferences, and then use quarterly data for USA and France to test the model. With the information contained in the observed stochastic and deterministic trends, they derive a cointegration restriction to estimate curvature parameters of the instantaneous utility function. The remaining parameters are estimated in a second step by GMM. The constancy of different parameters is investigated both in the long run and in the short run. Habit formation turns out to be an important factor of import demand, and negligence of habit formation may lead to frequent rejection of the lifecycle hypothesis.

In order to deal with inconsistent IES estimated from intratemporal optimality condition and from Euler equations, Nishiyama (2005) proposes the cross-Euler equation approach as a prescription for this empirical dilemma, and finds that the Euler equation for domestic non-durable goods is mis-specified, while the Euler equation for imported non-durable goods is somehow correctly specified. Croix and Urbain (1998) and Nishiyama (2005) introduce habit formation into the permanent income hypothesis model and find that habit formation turns out to be an important factor for both import and domestic demands.

In this paper, we first extend the classical permanent-income model by introducing habit formation. Our theoretical model will be more realistic and robust to avoid the empirical dilemma described by Nishiyama (2005). If the parameters of habit formation are set to zero, the model degenerates to the classical model employed by Ceglowski (1991), Clarida (1994), Amano and Wirjanto (1996) and Xu (2002).

We then investigate whether import demand crowds out domestic demand in China, Japan and Korea. Following Cooley and Ogaki (1996), a two-step procedure is used. In the first step, a cointegration approach is used to estimate the cointegrating estimators of IES of import and domestic demands. In the second step, the estimated parameters derived from the first step are plugged into a Euler equation, and use GMM to estimate the parameters of habit formation of import and domestic demands.

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[2] In Section 2, we can see that the IES and AES have to be modified based on habit formation. When habit formation is encompassed, we define them as modified IES and modified AES.