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Estimating elasticity of import demand for gold in India☆

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A B S T R A C T

In India gold imports act as a huge burden on the country's current account balance and a large part of it lies idle in the economy. The attempts to curb the import demand have often failed in recent past. We explore the reasons of such failures by analyzing the gold demand pattern of India. In India gold is viewed not only as a consumption good and a financial asset; it also has a socio cultural dimension since ages. This paper derives the price and income elasticities of physical import demand for gold by taking these factors in account, which is unique in its scope. Unlike previous studies gold imports used for different purposes (jewellery, bar etc.) are analysed separately. The possibility of habit formation and inventory adjustment in determining the dynamics of India's import demand for gold have also been taken into consideration. Our findings suggest: first, different motives play roles in shaping demand for different forms of gold, although investment behaviour dominates over habit persistence in aggregate; second, given that the import demand for gold bars is inelastic with respect to real price, ceteris paribus, in both the short-run and the long-run, increment of tariff rates would not reduce import of other non-monetary unwrought forms of gold substantially; third, change in tariff rates, however, can bring down gold jewellery demand more in the long-run than in the short-run; fourth, expenditure effect is strong for gold jewellery demand while demand for gold bars responds little to any changes in import expenditure in the long-run and total gold demand is however moderately sensitive to expenditure movements. The results have important implications for anti-inflationary and anti-cyclical policymaking.

1. Introduction

India has been the largest consumer and importer of gold in the world for a long time. In fact, gold is India's second largest import content after petroleum products. Having a miniscule production of her mines,[1] almost entire demand for this precious metal is met through imports. An obvious outcome of this massive accumulation of gold from centuries of trading is that approximately 22000 t of gold hoarded by Indian households is lying idle in the economy (FICCI-WGC, 2014). The insatiable demand for gold leads to loss of opportunities in mainly two ways, viz., diversion of household savings from productive assets and diversion of hard-earned foreign exchange resource. Following arguments of Keynes (1913), many including the Government of India see this irresistible fascination towards gold as an illusion, a wasteful habit, and a remnant of the economic backwardness of the past. However, Chandavarkar (1961) refuted this view by claiming that gold holdings by Indians actually reflect practical considerations rather than unreasonable preferences, and a careful look at the data on holdings reveal "the actual extent of misdirection of resources involved is much less than is commonly supposed". In order to identify the underlying motives of gold hoarding by Indians, the Federation of Indian Chambers of Commerce and Industry and the World Gold Council surveyed a sample of 5000 households of India and found that 76.62% of the surveyed households buy gold for safe investment and 52.54% for adornment (FICCI-WGC, 2014).

This is the background of a long standing debate on the gold import policies as well as schemes on utilization of idle gold in India. However, the economic logic for gold demand in India is not as simple as it sounds. As India's gold economy is entrapped in several other socio-economic problems such as illegal transaction of gold, black or parallel economy, tax evasion, under- and over-invoicing in exports and imports etc., one has to look into a variety of aspects to understand the different dimensions of the gold demand in India. Surprisingly, only few attempts had so far been made to understand India's gold

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[1] India produces only 0.5% of her annual gold consumption (WGC, 2010).

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demand sentiment and its sensitivity to macroeconomic changes.

The present study looks at the import demand of physical gold[2] (non-monetary gold imports) in India. As it takes different forms, all the forms are taken into consideration, viz. non-monetary powder form of gold, other non-monetary semi-manufactured forms of gold and other non-monetary unwrought forms of gold.[3] The first two are linked with demand for gold jewellery and the latter with demand for gold bars. Demand for each component is not only driven by economic motives, but also by socio-cultural and psychological factors. To Indian consumers, purchasing gold is a daily life affair since the precious metal is seen as a sign of prosperity.[4] Gold is also treated as the fundamental asset for Indian households since it serves as a secure, tradable and liquid investment as well as a value preserver.

Significant shifts in the import of these non-monetary gold components by India in recent years have primarily motivated the present study. Fig. 1 shows that during the period of financial crises which started in mid-2008 there was a spectacular rise in import of gold bars due to its appeal as 'safe haven'.[5] On the contrary, jewellery demand dropped in 2008 and 2009 and remained steady afterwards.

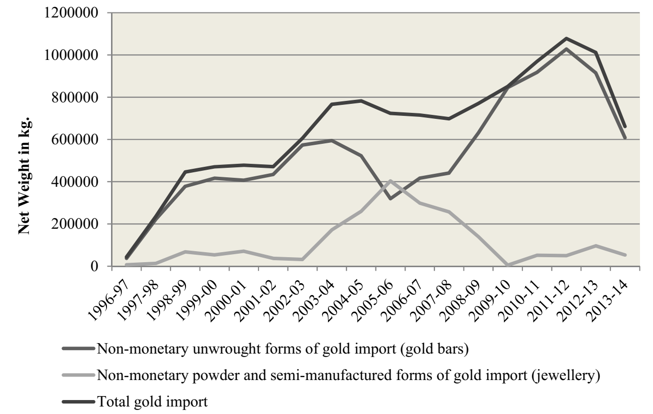

Fig. 1. Movements in gold import volume in India (Annual, 1996–97 to 2013–14). Source: DGCIS Database.

The rising demand for gold had an adverse impact on the current account balance of India. In order to reduce that burden, the government increased import duty on gold bars from Rs. 100 to Rs. 200 per 10gm, while duty on other forms of gold (excluding jewellery) was increased from Rs.250 to Rs. 500 per 10 g in 2009–10. But, it had minimal impact on buying. The government again raised the import duty on gold to 2%of value in January 2012 and to 10% in 2013. In July 2013, the Reserve Bank of India (RBI) introduced the 80:20 scheme, which required gold importers to re-export 20% of the incoming gold to address the high current account deficit. The RBI banned import of gold through star trading houses in August 2013. This resultant shortfall in supply, however, led to a phenomenal rise in the premium on gold in the market and a spike in gold smuggling. In November 2014, the RBI had withdrawn the 80:20 scheme to remove distortions in shipments and curb smuggling.

This has prompted research on many aspects of gold demand except on the role played by habits and stock adjustment effects in shaping gold demand. The reason behind suspecting that habits shape gold demand is that many of the decisions concerning gold consumption take time and effort to adjust. These decisions include long-term commitments such as accumulating wealth for adverse financial situations or for wedding purpose, earning psychic income from possession of gold etc. Habits arising from such long-term decisions or ingrained behaviours link consumers' preferences over time.[6] On the other hand, stock adjustment effect takes place when demand for gold increases following a reduction in its physical stock. Dynamic misspecification in an analysis, caused by omitted habit or stock adjustment effect, systematically mis-predicts the consumers' reaction to any policy. Hence, performing a demand analysis for disaggregated gold imports in India by considering its dynamic aspects is of utmost importance in explaining the sensitivity of gold imports to macroeconomic changes that is often missed out by policy makers while prescribing measures on the basis of aggregate gold demand pattern.

Given this backdrop, the study attempts to capture the behavioural and investment decisions that determine the nature of dynamic adjustment in monthly import demand for gold in India by modelling gold as a habit-forming good. For this purpose, an econometric analysis has been performed using three dynamic demand models based on distributed lag specification. The empirical results distinctly portray how response of demand for gold bars to macroeconomic changes differ substantially than that of gold jewellery demand, and how the aggregate demand analysis fails to capture the non-symmetric dynamic mechanisms operating on different components of gold import demand in India. The obtained estimates of elasticities of gold import demand suggest that Indian consumers care about the variation of gold prices and import expenditures as well as of silver prices and long-term bond yield in the short-run, but in the longer horizon they exhibit demand persistence. The study also unfolds how speed of adjustment from short-term deviation to long-run equilibrium vary significantly for jewellery demand and demand for bars. By including lags of demand variable as regressors, the study also provides empirical justification to the fact that Indian consumers' fetish for gold is not just an economic phenomenon, but it also has a deep-rooted psychological reason. To the best of our knowledge, this is the first attempt to empirically investigate dynamics of disaggregated physical gold import demand in India in a monthly set up.

The rest of the study is organized as follows. Section 2 provides the survey of literature. Section 3 identifies the role of habit formation in explaining gold demand inertia, outlines the methodological framework. Data descriptions are provided in Section 4 followed by empirical findings in Section 5. Section 6 concludes with policy discussions.

2. Literature review

Gold demand being a fundamental economic variable has attracted attention of the researchers for ages. Several attempts have been made to identify the microeconomic as well as macroeconomic drivers of gold demand. Majority of these studies, with prime focus on inter-linkage between gold and other financial instruments, falls under investor behaviour strand of research related to gold. Recently, the collapse in the financial and economic conditions in the US and the European countries offered strong motivation to study the viability of gold as a safe haven from shortfall in financial markets (Baur and McDermott, 2010; Baur and Lucey, 2010). These studies are mostly based on developed economies, such as the US and the European countries.

The present study, however, corresponds to physical demand for gold, the strand considerably less explored. A significant part of this market reflects demand from emerging-market economies where gold has traditionally been store of value and symbol of wealth. Starr and Tran (2008) made first attempt to comprehensively examine the factors affecting physical demand for gold, using panel data covering 21 countries for the period from 1992 to 2003. They found that persistent heterogeneities in physical gold demand across nations are consistent

[2] Physical demand for gold refers to the acquisitions of gold in physical forms such as jewellery, bars, coins, and medallions.
[3] This study does not include import of monetary gold which is held in reserve by the central bank.
[4] In Indian weddings gold jewellery is considered to be 'necessity' rather than 'luxury'.
[5] Baur and Lucey (2010) defined a safe haven as "an asset that is uncorrelated or negatively correlated with another asset or portfolio in times of market stress or turmoil."
[6] 'Habit', being essentially a loose expression, could include a variety of phenomena, viz., adjustment costs, psychic costs, reference group behaviour etc.