Possibility of Inter-Sector Money Demand Conflict: A General Note

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ABSTRACT

In many ways, the macro-money demand function specification is biased. Sectoral aggregation, presence of non-monetized pockets of sectoral GDPs, changing sectoral GDP structure etc., are a few of those biases that can arise in the macro-money demand function specification. The first author of this study has extensively written on some of these biases. The objective of this general theoretical note is to explain in how many ways sectoral conflicts can arise in money demand. Employing a two-sector theoretical framework, the present study derives the conditions of possible sector (gender) conflicts and their implications for money demand specification.

INTRODUCTION

In an emerging economy, the sectoral GDP(gross domestic product) structure undergoes evolutionary change from a relatively developing economy towards an advanced or mature economy. During this transition, several sectoral types of conflicts take place. The purpose of this general note is to explain as to what those conflicts are and in particular, theoretically derive the implication of sectoral money demand conflicts. Section II details all those conflict possibilities; While section III derives the theoretical model from which follow the implications of conflicts for sectoral money demands, section IV ends with some concluding remarks.

THE REALITY

Non-constant Sector – GDP structure

It has been well-documented that inter-sector money demands vary between the households and the rest of the economy (Ashworth et. Al., 2014; Ireland 2009; Caza and Zahini 2010). Ganti (1996) has empirically demonstrated that sector aggregation bias exists in the macro-money demand function for an emerging market economy of India. The implication is that for an emerging market economy, where the sectoral GDP structure keeps evolving, inter-sector money demands differ. This was, empirically, shown by the inclusion of Herfindahl index as proxy for evolving GDP structure of India, in the macro-money demand function. The empirical evidence was highly significant (Ganti et. Al., 2016; and Ganti and Teledevara 2013).

Inter-Sector Growth Structure and Risk

The Growth riskiness of the individual sectors can be gauged by applying a portfolio theoretic model of sectoral growth. For this purpose, the Capital Asset Pricing Model (CAPM) of Sharpe (1970) and Lintner (1965) comes handy. Ganti and Venkateshwarulu (2008) have applied the CAPM to the sectoral growth rates vis-a-vis the national GDP growth rate for India for the period 1980-81 to 2003-04. First, for the three broad sectors –(i.) agriculture and allied activities, (ii.) industry and (iii.) services – economy the CAPM was applied. The empirical evidence strongly suggests that only the industrial sector was in tandem with the aggregate growth riskiness as well as with the growth cycle. However, the primary sector and the services sector appear to be more riskier than the aggregate, though they both stay in tandem with the national cycle. However, the permanent growth rate estimates appear to be highly negative and significant for the

agriculture and allied activities sector, but not so for the services sector. The industry sector's permanent growth rate turns out to be zero empirically.Going into the sub-sectoral detail, we found evidence that the manufacturing sector grows almost close to zero. The finance, insurance etc., sector exhibits zero risk. The other two sectors – electricity, gas and water supply and social, community services – equally exhibit zero risk but significant, though low, permanent growth rates. The implication is that wherever growth riskiness is close to zero, and the permanent growth rates are very low, these sectors are almost entirely dependent on the government support and/or the support of the exchange rate.

Inter-Sector Money Demand Propensities Differ

Gross Domestic Product (GDP) as the single scale variable in the money demand function is justifiable only on the simplifying assumption that the individual sector GDPs have the same marginal money demand propensities. This assumption was recently verified to be not true (Ganti and Acharya, 2017). The GDP was replaced by two sector – commodities and services- GDPs and the elasticity of substitution between the two is not unity. The reason for including the services and the commodity sectors is that their supply and pricing bases significantly differ between them. Commodities are not only fungible but also they are off-the-shelf offerings. Moreover, it is easier to bid their price, in the sense that it is easy to quote the price of the known item. On the contrary, a service is a 'proposal', consisting mainly of not only identifying what needs to be delivered, but also, as to how it needs to be done. The mode of delivery is as important as the price itself. Although, experience counts with both of them, with services it is more unique than it is with commodities.

Gender also plays a very significant role

In addition to the earlier three possibilities for conflict arising in the macro-money demand, the fourth possible conflict may arise due to the 'gender factor.' This gender factor relates to the gender differences in pay and entrepreneurship (Piner et. Al., 2010). The pay gap is going to widen in future and the economic status of the educated women is going to deteriorate. It appears that women are more likely to be credit constrained than men (Congena and Popov, 2015). Above all, gender differences are very much pronounced, it seems, in personal saving

behaviour. These differences will have significant impact on the aggregate savings (Floro and Seguino, 2002). After controlling for risk, it appears men are likely to save regularly in the short run than women. Using panel data for 20 semi-industrialized countries, covering 1975-95 period, it was shown that shifts in women's income affect their bargaining power. These shifts also have discernible effects on aggregate saving.

Conflict in Gender Attitudes

Gender and rent-seeking has been the focus of several studies and more so of the Transparency International institution. Special attention has been paid on gender equality in political and government institutions. Female perceptions, attitudes and behaviour towards rent-seeking (scientific phrase for the word "corruption") appears to be very mild than that of males (Vijayalakshmi, 2005, 1-35). The same view has been expressed by the Transparency International, People and Corruption in Europe and Central Asia (2016) 1-40.

INTER-SECTOR/GENDER MONEY DEMAND CONFLICT

In the earlier section, it is clearly narrated as to how inter-sector (hereafter, sector/gender are interchangeable) conflicts would generate money demand conflicts. Growth differences across the sectors will have implications for money demand propensities not only at a given time but also overtime. Inter-sector interdependency causes inter-sector interdependency of economic potential overtime. The present analytical note attempts to portray the nature of this interdependency and its implications for macro-money demand conflict. For purposes of analysis, two sectors (genders) are denoted by 1 and 2.

The Model

Following the conventional constant elasticity specifications, we write:

- $m_1 = k_1 y_1^{\alpha 1} e^{(-\beta 1, i)}$

- $m2 = k_2 y_2^{\alpha 2} e^{(-\beta 2, i)}$

- $m = m_1 + m_2$

- $\bar{y} = y_1 + y_2$

- where, $m_1 = M_1/P_1$; $m_2 = M_2/P_2$; $y_1 = Y_1/P_1$; $y_2 = Y_2/P_2$ and $\bar{y} = Y/P$. k_1, k_2, α_1, α_2, β_1 & β_2 are technology, sectoral income elasticity and interest elasticity parameters. Similarly, Y_i and P_i are sectoral income and price deflator

indices respectively. Y and P are aggregate GDP and GDP deflator. A further simplifying assumption (also inconsequential assumption) is that sectors face the same interest rate.

- write $m_2 = k_2 (\bar{y} - y_1)^{\alpha 2}$

- Rewrite (1) to express y in terms of m_1, substitute it for y_1 in (5) and write m_2 as a function of m_1 to get:

- $m_2 = k_2 [\bar{y} - (m_1/k_1)^{1/\alpha 1}]^{\alpha 2}$

- This relation (6) is the crucial expression that brings out the interdependency of the sectoral money demands. It may be named as the Sectoral Money Demand Conflict Frontier (SMCDF). It functionally relates the two sector functions (1) and (2) via the level parameters k_i, the elasticities α_i and the macro-GDP. Now, it is easy to show the possibility of trade-off between the sectoral money demands.

- The slope of the SMCDF measures the rate of trade-off between the sectoral money demands. If the slope of SMCDF is greater than/equal/less than zero, then the sectoral money demands are mutually reinforcing, independent or conflicting. In algebraic form, the slope is:

- $dm2/dm1 = - k_2 y_2/\alpha_1 [\bar{y} - (m_1/k_1)^{1/\alpha 1}] [m_1/k_1]^{[(1-\alpha 1)/\alpha 1]}$

- This expression (7) is greater than/equals/less than zero according as the expression in the first broad parentheses on the RHS of (7) is greater than/equals/less than zero. It can be easily seen, however, that the term is always positive as k_1 is generally greater than/equals unity, even if α_1 equals unity. Thus the slope of (6) is always negative for k_1, α_1, m_1 and $y_1 > 0$. It follows then that there is a trade off between the sectoral money demands.

- To find out whether the SMCDF is concave or convex to the origin, we need to examine the second derivative of (6) and it is given by:

- $d^2 m_2/dm_1^2 = \lambda_1 [(\alpha_1 - 1)/\alpha_1] + \lambda_2 (\alpha_2 - 1)$ where

- $\lambda_1 = k_2 \alpha_2/\alpha_1 [\bar{y} - (m_1/k_1)^{1/\alpha 1}]^{\alpha 2-1} (m_1/k_1)^{[(1-2\alpha 1)/\alpha 1]}$

- $\lambda_2 = k_2 \alpha_2/\alpha_1^2 [\bar{y} - (m_1/k_1)^{1/\alpha 1}]^{\alpha 2-1} (m_1/k_1)^{[2(1-\alpha 1)/\alpha 1]}$

- Both (9) and (10) expressions for λ_1 and λ_2 are very much inelegant expressions and they are always positive. It therefore follows that,

- $d^2 m_2/dm_1^2$ is greater than/equal/less than zero, according as α_1 and α_2 are greater than/equal to less than unity.

  ➢ For α_1 and $\alpha_2 > 1$, SMCDF is convex to the origin.

  ➢ For α_1 and $\alpha_2 = 1$, SMCDF is a downward sloping straight line.

  ➢ For α_1 and $\alpha_2 < 1$, SMCDF is concave to the origin.

- The above conditions imply that sectoral money demands are income elastic, unitary elastic and inelastic respectively. If one sector increases its demand for money, it can do so only at the expense of the other sector, unless until is accommodated by increase in money supply by the policy maker.

- The conditions in which $m = m_1 + m_2$ would be maximum requires the first derivative dm/dy of (11) should equal zero first.

- $m = k_1 y_1^{\alpha 1} + k_2 (y - y_2)^{\alpha 2}$

- $dm/dy = k_1 \alpha_1 y_1^{(\alpha 1-1)} - k_2 \alpha_2 (y - y_1)^{\alpha 2-1} = 0$ or

- $k_1 \alpha_1 y_1^{(\alpha 1-1)} = k_2 \alpha_2 (y - y_1)^{\alpha 2-1}$

- Assuming α_1, $\alpha_2 < 1$, the sum of sectoral money demands reaches a maximum at the point where the marginal money demand propensities are equal between the sectors.

  ➢ If the SMCDF is concave to the origin, any movement away from equality of the slopes will only lead to a decrease in the total (sum of) sectoral money demands.

  ➢ If the SMCDF is a downward sloping straight line making an isosceles triangle with both the axes, total m ($m_1 + m_2$) will be a maximum and $m_1 = m_2$.

  ➢ If the SMCDF is convex to the origin, then m ($m_1 + m_2$) will be a maximum, if the sector with the highest $\partial m_i/\partial y_i$ gets all the income implying all GDP belongs to one sector and hence all money demand.

Rent-seeking and Money Demands

Overtime the economic (income) potential of the sectors increases through resource growth and improved efficiency. These factors shift SMCDF outward overtime. Such shifts may be more favourable to one sector or the other. Sometimes, it is quite likely, the new curve intersects with the initial one.

This kind of odd possibilities arise due to several factors including differences in rent-

seeking attitudes of the sectors and genders. Male and female entrepreneurs differ in their environments, attitudes and access to markets. Women are generally more credit constrained then men (Pines et al. , 2010; Malapit, 2007; Congena and Popov, 2015). Pay gap between the genders is going to widen it seems. Gender differences in saving propensities may have significant effects on aggregate (national) saving (Floro and Seguino, 2002).

Finally, a stage may come when the rent-seeking attitudes get so acute that the demand for money might lose its connection with the GDP alone.

SOME CONCLUDING REMARKS

In this note, we tried to highlight the various ways in which conflict may arise in sectoral demand for money. The idea has been based on several empirical studies reported by the first author of this note over almost a quarter century period. The present note is a general theoretical note that formalizes the possibility of inter-sector and inter-gender conflicts in money demand.

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