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EFFECT OF SUBSTITUTION OF FINANCIAL SAVINGS WITH NON-FINANCIAL SAVINGS

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ABSTRACT :

One of the major constraints that India has been facing of late, is savings constraint. This limits investment. It has been observed that in recent times, there has been a fall in real rate of interest which has discouraged savings and led to substitution of financial savings with non-financial savings (primarily gold). This paper shows that a rise in import of gold adds to further constraint on investment by lowering savings through a variety of channels. Further a rate cut in times of economic gloom leads to stagflation, instead of causing a recovery, by increasing consumption of gold and lowering savings.

JEL Classification: E10, E21, E40

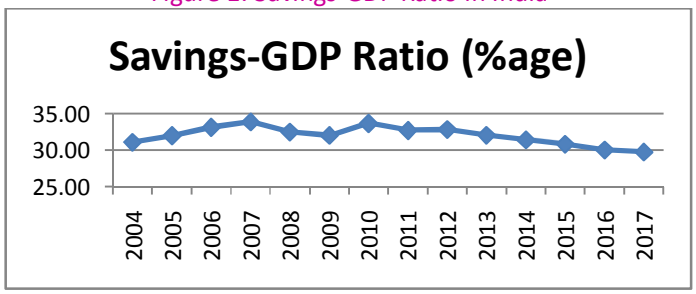
KEYWORDS :*savings, investment stagflation gold, non-financial saving.*

1. INTRODUCTION

The role of financial savings, particularly for a Less Developed Economy is extremely huge. Since, investment is constrained by savings, a decline in private financial savings (henceforth, savings) reduces investment as well, unless investment is financed by foreign financial savings. However, financial savings emanating from foreign brings with it many disadvantages. Unless foreign saving comes in the form of Foreign Direct Investment, it cannot be used to finance investment directly. In case, foreign savings takes the form of portfolio investment, the capital flow can be reversed at a moment's notice. Hence, portfolio flows cannot be utilized to supplement investment, which requires long-term funds. However, portfolio flows induce investment indirectly, by appreciating the exchange rate, which reduces cost of intermediate inputs for investment (like imported capital or oil) and reduces the amount of debt-burden. These improve asset quality, reduces external finance premium and thus, improves net-worth of firms. These facts lead to a splurge in investment.

The major constraint that has been plaguing India, ever since her independence is foreign exchange constraint. Thus, it times when inflow of foreign capital dries up, it becomes immensely important to sponsor investment by supplementing domestic savings. However, as Figure 1 shows, there has been a fall in the savings-GDP ratio of the country in recent years, leading to a greater dependence on foreign capital. However, capital inflow in various years plummeted in the wake of global recession. This dented investment and compromised on India's growth.

Figure 1: Savings-GDP Ratio in India



Source: RBI

From a peak of 33.7% in 2011, the saving-GDP ratio in India has registered a gradual decline till 2017. The figure for 2017 is undoubtedly low by average (32.05%) of high growth years, during the year 2004 to 2011. On the other hand during these years, import of gold has registered a hike. The reason is as follows: The rate of return on financial savings has headed negative territory ever since, 2009-10, which has lead to a substitution of financial savings with purchase of gold for consumption and investment purposes.

Table 1: Real Rate of Interest in India

Year	CPI (IW)	CPI (AL)	Deposit Rate %(one year, SBI)	Real Interest Rate %, For IW	Real Interest Rate %, ForAL
2007-08	6.5	7.5	8.75	2.25	1.25
2008-09	9.1	10.2	8.1	-1	-2.1
2009-10	18.32	13.25	6	-12.32	-7.25
2010-11	10.03	10.1	8.25	-1.78	-1.85
2011-12	8.41	8.21	9.25	0.84	1.04
2012-13	10.43	10	8.75	-1.68	-1.25
2013-14	18.38	17.62	8.75	-9.63	-8.87
2014-15	6.95	8.05	8.75	1.8	0.7

Source: RBI and Ghosh and Ghosh (2016)

Since, India primarily imports gold, the substitution of savings with non-financial savings has led to severe BOP difficulties. Further, the substitution has severe economic consequences for Indian Macroeconomic scenario. Section3 investigates this issue after developing a suitable macro-model in Section 2. Section 4 does the comparative static effect of a hike in rate of interest, and shows that a cut in interest rate can spark stagflationary forces. Finally Section 5 concludes the paper.

2. Model

We shall now build a macro-economic model that correctly captures the effect of substitution of financial savings with non-financial savings. As is well established in literature, India is highly dependent of import of intermediate inputs (like oil, metals, steel, cement, gems and precious stones, e.t.c.) for her domestic production. Since, India has lost the chance of developing its own industrial base, like that of China, India has to be dependent on her import partners to provide these items. Thus, any macroeconomic model must capture this attribute. Since, the focus of the paper is on substitution of financial savings with non-financial savings, like gold, gems and other precious metals (henceforth gold only), we club imports into two categories. First one imports of all other goodsthan gold (which also encapsulates the big list of intermediate

inputs), and gold. Further, for simplicity, we assume that only intermediate goods and gold are imported. Inclusion of other types of imports will not alter our result. Under conditions of wage-rigidity (due to the existence of minimum-wage and labour-unions) and perfect competition, the equilibrium condition under profit-maximization will be given by:

$$P = \bar{w}a_L + EP^*M(\frac{EP^*}{P}, Y)a_o(1)$$

where by assumption, we consider $\bar{w}$ to be the given wage rate of labour and P^* is the given foreign price level (given on the home country). E and $\frac{EP^*}{P}$ are the nominal and the real exchange rates. $M(\frac{EP^*}{P}, Y)$, is therefore the import of intermediate input of the nation, which is a decreasing function of real exchange rate and increasing income (Y). a_L and a_o are unit requirement of labour and imported intermediate good used for production of one unit of the domestic commodity. The R.H.S. of (1) is nothing but the average cost of production, which under conditions of perfect competition equals price (the L.H.S.). Equation (1), gives us the equation of supply curve.

We shall now focus on the balance of payment (BOP) identity. Under a flexible exchange rate regime, BOP is given by the sum total of current and capital account balance. Current account balance is the difference between export and sum total of import(of intermediate goods and gold, latter being given by, M_g) and debt servicing charge. Now, export is a positive function of real exchange rate and foreign income, Y^*, and debt servicing charge is given by $r^*D\frac{EP^*}{P}$, where, r^* and D are foreign rate of interest and nominal value of external debt (measured in foreign good, and is deemed to be constant in short-run) respectively. Capital account balance (flow of foreign capital, given by F) is an increasing function of interest rate differential ($\bar{r} - r^*$) and income; and decreasing function of external debt in terms of domestic good ($D\frac{EP^*}{P}$). Here, we assume that domestic interest is fixed at $\bar{r}$, due to the prevalence of interest rate targeting, as practiced in India, via the operation of Liquidity Adjustment Facility (LAF). The very objective of LAF is to arrest the call-money rate within the repo and reverse rate, and thus, it imparts interest rate rigidity within a corridor. In a static model framework, the way to capture this property is to assume interest to be pegged at $\bar{r}$, which can be increased or decreased depending upon macroeconomic conditions by the RBI. Thus, BOP identity is written as:

$$X\left(\frac{EP^*}{P}, Y^*\right) - M\left(\frac{EP^*}{P}, Y\right) - M_g - r^*D\frac{EP^*}{P} + F\left(\bar{r} - r^*, Y, D\frac{EP^*}{P}\right) = 0(2)$$

From, 2 we can solve for E. This is given by equation (3):

$$E = E(P, Y; \bar{r}), \text{where, } E_{\bar{r}} < 0. \quad (3)$$

The cross-partial of E w.r.t. to $\bar{r}$ is negative as domestic interest rate rises, foreign capital flows in (so that it can reap higher returns by investing in India) and tends to appreciate the exchange rate. Plugging (3) in (2), we can write:

$$P = \bar{w}a_L + E(P, Y; \bar{r})P^*M(\frac{E(P,Y;\bar{r})P^*}{P}, Y)a_o \text{where, } E_Y >< 0, E_P > 0(4)$$

$$\text{And } E_Y = \frac{M_Y - F_Y}{\frac{P^*}{P}(X_{\frac{E(P,Y;\bar{r})P^*}{P}} - M_{\frac{E(P,Y;\bar{r})P^*}{P}} - r^*D + F_D\frac{EP^*D}{P})} \gtrless 0 \ (5)$$

The cross-partial of E w.r.t. Y is ambiguous since an increase in Y has two opposite effects on E, as is evident from (4). When output rises, on one hand import-demand increases which raises the exchange rate,

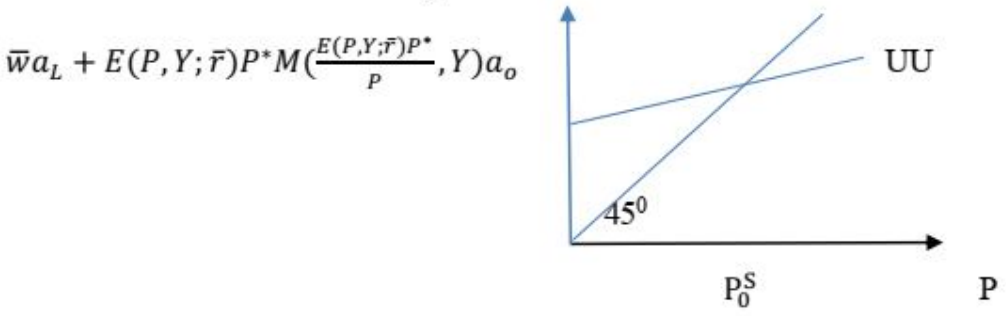
while on the other hand, higher output draws in more foreign capital (since investors who are governed by adaptive expectation become hopeful of a higher future output of the domestic country and hence invest in domestic assets) which lowers the exchange rate. The net effect on the exchange rate will depend on the relative strengths of the two opposite effects.

We shall now prove existence of supply price. Given Y; as $P \to 0$, unit cost of production (denoted by U) given by the R.H.S. of (4) tends to $\bar{w}a_L > 0$. Hence, if $\frac{dU}{dP} < 1$ holds, there will be a unique positive supply price. Thus, when

$$0 < \frac{dU}{dP} = E_P P^* M\left(\frac{E(P,Y;\bar{r})P^*}{P}, Y\right) a_o + E(\cdot)\frac{P^*}{P} M_{\frac{E(P,Y;\bar{r})P^*}{P}} E_P - E(\cdot)^2 \frac{P^*}{P^2} M_{\frac{E(P,Y;\bar{r})P^*}{P}} < 1 \quad (6)$$

there will be a unique positive P at which $U = P$. Hence the supply price will exist. We assume this condition to hold for every Y, given the exogenous variables. The solution of (4) is shown in Figure 1, where the supply price, i.e., the P that satisfies (4), corresponds to the point of intersection of the schedule UU (which gives the value of r.h.s. of (4) corresponding to every P) and the 45° line.

Fig. 1: Existence of AS curve



Let us now examine how the supply price of behaves following a given increase in Y. When Y increases, exchange rate can either rise or decline depending upon $E_Y >< 0$. When $E_Y > 0$, the r.h.s. of (4) corresponding to any given P increases, and the curve UU shifts upward. This increases the supply price. Thus when $E_Y > 0$, we get a positive relation between supply price and output. Hence, the AS curve is positively sloped in this case. On the contrary, when $E_Y < 0$, as output increases, the r.h.s. of (4), corresponding to any given P decreases, leading to a downward shift in UU and thereby to a decline in supply price. Thus, when $E_Y < 0$, the AS curve is negatively sloped. These are shown in Figures 2a and 2b respectively, along with the AD curve, whose specification shall shortly follow.

Now, as we have noted, when real interest rate falls, economic agents are witnessed to substitute financial savings with non-financial savings, primarily gold. Alternatively, we can say that as real rate of interest rises, agents will be more likely to substitute non-financial savings with financial savings, which have a higher liquidity. Thus as $\bar{r}$ rises, consumption of gold will fall. As a result, import of gold will fall too, as we assume here that gold is used for consumption purpose only. Even if we assume that a part of gold is exported after processing, then consumption will be only a fraction of gold import, However, let us continue with our assumption that gold imported is solely used for consumption.

Hence $\bar{r}$ will be determinant of consumption function (C), apart from disposable income ($Y - tY$). Hence we can write the consumption function as:

$$C = C(Y - tY, \bar{r});\ 0 < C_Y < 1; C_{\bar{r}} < 0 \quad (7)$$

Investment is considered to be a falling function of rate of interest and value of debt in terms of domestic good $D\frac{EP^*}{P}$; and a rising function of domestic output. Hence, we can write the investment function as:

$$I = I\left(\bar{r}, D\frac{EP^*}{P}, Y\right);\ I_{\bar{r}}, I_{D\frac{EP^*}{P}} < 0;\ I_{Y,} > 0 \quad (8)$$

Government expenditure is assumed to be fixed at G. Net export is given by export, net of import of intermediate goods and import of gold. Since, a rise in interest rate increases rate of return on savings, it reduces the volume of gold import. Thus import of gold can be expressed as a decreasing function of interest rate. This is shown in equation (9).

$$X\left(\frac{EP^*}{P}, Y^*\right) - M\left(\frac{EP^*}{P}, Y\right) - M_G(\bar{r}) \quad (9)$$

Thus, AD curve is given by the equation:

$$AD = C(Y - tY, \bar{r});\ +I\left(\bar{r}, D\frac{EP^*}{P}, Y\right) + G + X\left(\frac{EP^*}{P}, Y^*\right) - M\left(\frac{EP^*}{P}, Y\right) - M_G(\bar{r}) (10)$$

Product Market Equilibrium is given by the condition:

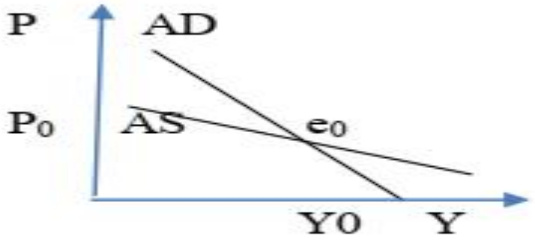
$$AD = Y (11)$$

Thus using (11) in (10), we can express Y as a function of P, which gives the equation of AD curve as:

$$Y = C(Y - tY, \bar{r});\ +I\left(\bar{r}, D\frac{EP^*}{P}, Y\right) + G + X\left(\frac{EP^*}{P}, Y^*\right) - M\left(\frac{EP^*}{P}, Y\right) - M_G(\bar{r}) (12)$$

Note that a rise in price level reduces the value of debt in terms of domestic good and thus, gives a boost to investment, it reduces net-export. Assuming this later channel to dominate, we get AD curve as a downward sloping line. This is shown in Figure 2a. In the case where AS is downward sloping, we need AS to be flatter than AD curve for equilibrium to be stable.

Fig. 2a: Equilibrium Output and Price when AS Curve is Downward Sloping

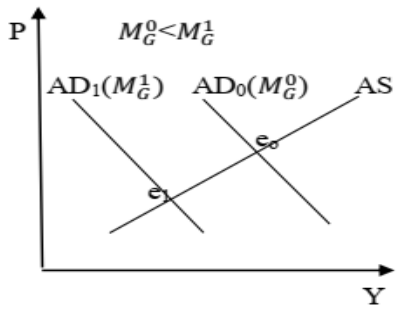


3. Effect of Rise in Consumption of Gold

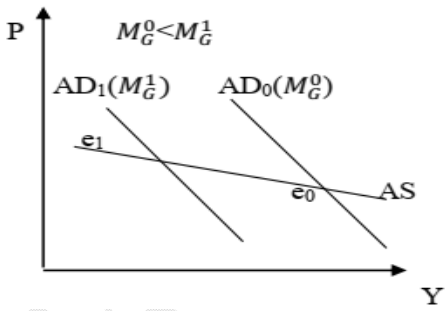
Let us now consider the effect of an exogenous rise in the amount of gold import, from M_G^0 to M_G^1. The macroeconomic impact is straightforward. As in the case of rise in any import, which is a leakage from national income, in this case also, AD falls for every P. Thus, AD curve shifts to be left, with position of AS curve remaining unchanged. Clearly, the effect is fall in GDP. Now, what is important to discern is that as gold import rises a country faces a deeper recession. This is because a rise in gold import due to higher gold

consumption reduces financial savings constraining investment. Since a rise in import raises exchange rate, investment further falls due to higher value of debt. Further, capital flow is dried up making the investment constraint all the more binding. Therefore, a rise in gold import spells grave macroeconomic consequences in the Indian context. Diagrammatically, this is shown in Figures 3a and 3b. AD_0 and AD_1 are the initial and final demand curves corresponding to import of gold M_G^0 and M_G^1. Equilibrium shifts from e_o to e_1, leading the economy into recession.

3a. Effect on rise Import of Gold



3b. Effect on rise Import of Gold



The more severe effect arises when AS curve slopes downward, where the end result is stagflation.

4. EFFECT OF A CUT IN INTEREST RATE

Let us now examine the impact of a rate cut, particularly under conditions of recession. A rate cut in our model leads to a lowering of return on financial savings and hence, it encourages import of gold. The rise in import and narrowing of interest rate differential tends to depreciate the exchange rate. As a result, investment falls. Now, the depressing effect is stronger than the favourable effect of a rate cut on investment. Thus, the net effect on investment is likely to be negative, despite a rate cut. Therefore, total aggregate demand falls due to a rate cut, instead of a rise. Therefore, in terms of our diagram, the AD curve shifts left from AD_0 to AD_1, as shown in Figures 4a and 4b.

Focus on the AS curve now. A fall in rate of interest leads to a rise in exchange rate, which raises cost of production by increasing cost of imported intermediate good. Hence the R.H.S. of (4) rises. To ensure equilibrium, price has to rise. Thus AS curve shifts to the left from AS_0 to AS_1 in Figure 4a and to the right in Figure 4b.

Fig 4a: Effect of Rate Cut

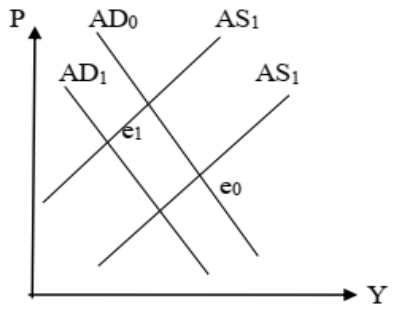
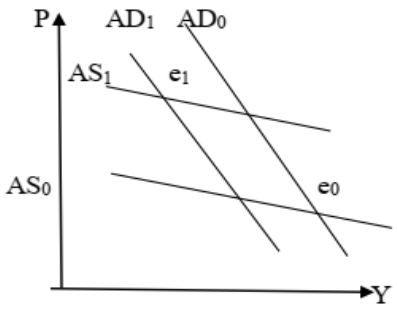


Fig 4b: Effect of Rate Cut



Consider Fig. 4a first. In this case, the end result of a rate cut is a decline in GDP, with the effect on price remaining ambiguous. Let us now focus on Fig. 4b, where the end result of a rate cut is unambiguously

stagflation. It is fairly easy to understand why GDP falls. A fall in GDP raisesexchange rate (since, $E_Y < 0$). Further a rate cut too, manifests into a higher value of exchange rate. Thus exchange rate unambiguously rises, which raises cost of production. Thus price rises. Therefore, undoubtedly, a rate cut worsens stagflation.

Thus it is imminent that in times of depression, a rate cut will not lead to a spur in economic activities. Contrary to common understanding, a rate cut will deepen recession and lead to a higher dose of inflation. Since, both the situations are unwarranted and lead to distress, it is advisable to find other avenues that will promote faith on the Indian financial system, and lead to a higher thriftiness among the citizens.

Though we have assumed here, for the sake of simplicity that the entire gold import is used for consumption, in reality, consumption of gold is a fraction (though large!) of the total import. In this case, the recessionary pressure will be even larger. Let us explain, since consumption of gold is just a fraction of the gold import, AD falls after a rate cut unambiguously, more due to greater leakage. In the previous case, consumption of domestic goods (given by the difference between total consumption and import ($C - M_G$)) remains unchanged after a rate cut, since the rise in C is equally matched by a rise in M_G, and the fall in AD was led by a fall in private investment. However, in this case, a rise in $C$is only a fraction (say α) of the rise in M_G. Thus AD falls here due to a rise in import net of consumption [by (α-1)M_G], apart from the fall in private investment. Thus, the recessionary forces are larger in this case that the former. Hence, a rate cut will be all the more counter-productive.

5. CONCLUSION: CASE STUDY INDIA

Consider the Indian scenario, particularly from 2007-08 onwards; Real interest rate hovered in the positive territory during this year, posting a figure of 2.25% and 1.25% for the Industrial workers and agricultural labourers respectively (see Table 1). However, during the next financial year, it entered the negative territory, and continued to remain so till 2013-14, barring the single year 2011-12. However, between 2011-12 and 2012-13, the trajectory once again reversed leading to negative return on financial savings. As a result, savings ratio plummeted from almost 33% to around 32 %. Since then, the ratio has been declining as evidenced from Figure 1. What is interesting is the two consecutive years 2011-12 and 2012-13. Despite a slew of rate cuts, aimed at reviving the domestic economy, GDP growth rate fell from 10.25% in 2010-11 to 6.64% in 2011-12 and further to 5.46% in 2012-13. Hence, the efforts to revive domestic output through a series of rate cuts turned out to be futile. It is indicative to note that the repo rate which stood at 8.5% on October, 2011, fell to 8% on April, 2012, after which it was further reduced to 7.75 on January, 2013. On March, 2013 it was tad lowered to 7.5% and finally to 7.25% on May, 2013. What is interesting to note is that, gold import rose to USD 56.2 Billion in 2011-12 from USD 40.6 Billion in the previous year. In the year 2012-13, it was just a tad lower at USD 53.8 Billion. The rate cut led to capital outflow, and coupled with higher import of gold, it depreciated the exchange rate from 45.72 in 2010-11 to 46.67 in 2011-12 and finally to 53.44 in 2012-13. This testimony clearly brings out the conjecture of this article that in times of global distress, when return on financial savings is low, a rate cut will induce higher import on gold, leading to diversion to non-financial savings, and also, it will lead to exchange rate depreciation, that will propel inflation, crowd out investment and deepen recession. The lowering of interest rate, coupled with high inflation led to outflow of foreign capital that exacerbated exchange rate depreciation (due to higher import of gold). This led to lowering of return on investment and decline in domestic output. Further, exchange rate depreciation led to increased cost of production, leading to inflation in turn. Therefore, the end result was stagflation, as illustrated in Figure 4b.

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