

# Financial Inclusion Fosters Growth: Simple Multiplier and "AK" Growth Model Analysis

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*“Financial exclusion is the worst form of inflicting economic misery. This is a factual reality, and reality itself is a fact.” --Anonymous.*

**Abstract** This study clearly demonstrates analytically that financial inclusion as the aim of a supply leading strategy of financial development model can clearly create faster growth. Firstly, a multiplier model is used to demonstrating as to how financial inclusion creates more output than in case of a demand following model of financial development. Secondly, the most popular “AK” growth model framework is used to analytically demonstrating the superiority of financial inclusion in creating faster growth. Thirdly, with simple algebra of the well-known Harberger little triangle and rectangle, the superiority of financial inclusion is numerically demonstrated as an integral component of the supply leading financial development strategy.

**Keywords** Financial Inclusion, AK Growth Model, Financial Tripod, Jan Dhan Yojna

investment. In case of direct finance, investors may directly access the stock markets or borrow directly from the unorganized money market. It depends on the scale of investment by the investor. When stock markets (or capital markets) financially intermediate on a large scale, we identify that economy as a more market-oriented economy. In case of indirect finance, the investors borrow largely from the banks and other financial institutions for investment. In this case, financial intermediation is said to be done by commercial banks and the economy is said to be in a bank-oriented stage of financial development. Thus, both direct and indirect forms of finance contribute to the financialization of saving and financial saving is fungible. Fungibility of saving enables efficient allocation of saving into productive investments and in turn acts as an incentive to increasing the rate of saving. The rest of the study is organized as follows. Section 2 details a very brief account of progress in financial inclusion and then suggests a policy thrust tripod to help strongly improve the focus on financial tripod; section 3 develops a simple but highly meaningful multiplier plus “AK” growth model that details as to how financial inclusion fosters fast economic growth and section 4 concludes with summary and some remarks.

## 1. Introduction

“Financial inclusion is the process of ensuring access to appropriate financial products and services needed by all sections of the society in general and vulnerable groups such as weaker sections and low income groups in particular at an affordable cost in a fair and transparent manner by mainstream institutional players,” says Mundra, 2016[1]. In the introductory courses in finance we are taught that there are three techniques of financing investment and they are self-finance, direct finance, and indirect finance. In case of self-finance, small and micro-enterprises and individuals entirely depend on one’s own resources to invest that by definition equal to one’s own saving. This, in case of the financially excluded individuals, amounts to saving in physical form which, by definition is equal to physical

## 2. Financial Inclusion in India

### 2.1. Why Financial Inclusion has not gained an All-Out Strategic Thrust until Recently?

One smashing rule in life is always facing the facts. Thus, the answer to the above question lies in the lack of sufficiently strong presence of two sets of tripods and they are: 1. the Financial Tripod given by Rajan, 2009[2] and the other 2.the Policy-Thrust Tripod mentioned by Harvey, 2004[3].The financial tripod has three legs and they are: a) financial literacy, b) financial architecture and c) financial inclusion; the policy-thrust tripod has three legs and they are a) strategy thrust, b) support thrust and c) program thrust.

### 2.1.1. Progress in the Financial Tripod

Of the three legs of the financial tripod, financial literacy and financial architecture heavily determine financial inclusion. While financial inclusion works from the supply side of access to financial services, financial literacy improves on demand for it only. Financial literacy in turn is highly fuelled by the availability of proper financial infrastructure. Financial infrastructure creation, in turn, can be done either by following the demand for it or get created as part of a national supply leading strategy thrust for financial development. Reserve Bank of India (RBI) had implemented several purpose-oriented initiatives including the Lead Bank Scheme, Regional Rural Banks (RRBs), Service Area Approach, Self-Help Group (SHG) – Bank linkage program, Local Area Banks etc. None the less, several structural challenges have impeded the progress of financial inclusion, says Barua et al, 2016[4]. The most important of them is non-availability of a cost-effective technology on the supply side until recently. But now, the fast spread of information technology has enabled institutionalization of several financial infrastructural facilities. These include Banking Correspondents (BCs), basic service bank accounts (BSBAs), Aadhar Enabled Bank Accounts (AEBA), Basic Savings Bank Deposit Accounts (BSBDAs) of which the Prime Minister's Jan Dhan Yojana (PMJDY) is the product of the Prime Minister's policy thrust. The banking outlets in villages rose to above 586 thousand in March 2016 from 68 thousand in March 2010. Small farm and small nonfarm credit accounts stood at 47.31 million and 11.3 million respectively in March 2016 from 24.31 million and 1.4 million respectively in March 2010. The amounts in these accounts stood at Rs. 5230.37 billion and Rs. 1453.3 billion respectively in March 2016. All this information is from, Mundra, S.S., 2016[5]

### 2.1.2. Need for Further Progress on the Policy-Thrust Tripod

It is a stylized fact to learn that as economic development takes place; sectors such as agriculture and rural development are generally subject to a relative economic decline. This in turn is said to lead to financial illiteracy and force financial exclusion. One policy thrust that goes a long-way in reducing financial illiteracy and helps improve financial inclusion is to introduce a strategic policy thrust. The policy makes every higher- educational institution-say a university - to adopt a small group of rural villages with a view to helping educate the villagers to help them acquire financial literacy. This strategy is very much similar to that of every political leader adopting a village for a decent development of the village. Next, the support thrust for the above policy may consist in giving incentives by way of awarding course grades for the university students that help in educating the villagers. The course grade may not be made part of the qualifying grade point average, but an essential qualification to be eligible for award of degree to the student. This type of support thrust, invariably, is likely to end up in

program dependency and generate a new class of vested interests. These kinds of programs tend to become more rigid over time even after the need for them is gone. This kind of program thrust needs to be discontinued once its time gets over as it is in the nature of these policy thrusts that soon turn into entitlements. As governments are competent to deal with this kind of issues of multi-policy functionality, they could deal with the externality problems that these types of policy-support thrusts might create. In view of this, the traditional financial regulatory approach may not help strengthen financial literacy for financial inclusion. A measured access to government safety net – both time horizon wise and financial support wise- would make the financial institution less exposed to the moral hazard problems. As a result, the access to safety net would be better insulated from failure.

## 3. Financial Inclusion Reduces Resource Waste for Faster Growth

### 3.1. Macro-Micro Scenarios

Financial inclusion would help achieve faster growth if as a result: 1) the macro-saving is not reduced but financial saving is increased as a proportion of macro-saving and 2) productivity of investment is, convincingly, higher under financial saving than under physical (saving) investment. For pure economic argument sake if one insists on comparing the benefits of growth with the costs of installing financial infrastructure and financial literacy for fostering financial inclusion, it should be done at both the macro and micro levels. At the macro-level, financial exclusion is considered the worst form of economic misery and worst form of violence. Uplifting people from such economic misery is never considered a gesture of charity but a right to progress because it is not caused by the economic institutions. It is already known well that financial investment productivity is higher than that of physical investment caused by physical savings found in the study by Pagano, 1992[6] and Rangarajan, 1998[7] and Thiel, 2001[8]. So, at the micro-level, if the return from financial investment is greater than that in the real sector and in turn greater than the cost of funds it means that the financial infrastructure has not reached the requisite optional level as optimality is related to time also. It is easier to transfer technology and create financial infrastructure that might have been considered optional yesterday but is optimal today. The principle of diminishing returns equally applies to provision of financial services by the financial infrastructure. Research in the 21<sup>st</sup> century is largely focused on exploring the asymmetries, causal relationships etc., between financial development and economic growth to the neglect of any analytical attempt to explaining as to how financial inclusion fosters growth. The rest of section 3 attempts to accomplish this.

**3.2. Output Multiplier in the Demand Following Model (DFM) of Financial Development and Financial Inclusion**

A fact is like an empty sack that cannot stand up on its own unless it is filled with analysis and explanation. Reporting facts alone is a dumb activity. As long as physical saving exists significantly, the efficiency of investment will suffer significantly at a low level. This can be demonstrated using the DFM approach to financial structure development. Let us posit the aggregate saving function as:

$$S = s_1 Y + s_2 i \dots \tag{1}$$

Where S= aggregate saving equal to the income dependent propensity to save ( $s_1$ ) times aggregate GDP (Y) plus that portion of saving that positively responds ( $s_2$ ) to the interest rate (i). The conventional view that ‘S’ does not generally respond positively significantly to changes in interest rate (i) does not matter for our illustration. Let us write that financial saving (F) is a fraction  $f$  of aggregate saving:

$$F = f S \tag{2}$$

Now let us posit that aggregate GDP(Y) is positively linked to investment (I) as

$$Y = k I \tag{3}$$

The condition, S = I equilibrium yields that

$$\begin{aligned} s_1 Y + s_2 i &= I \\ s_1 k I + s_2 i &= I \\ F = f s_1 k I + f s_2 i &\dots \dots \end{aligned} \tag{4}$$

In the traditional demand following model of financial development the growth of financial structure and the progress of financial intermediation depend on the growth of investment I. From (4) it can be seen that contribution of I to growth in turn depends on the parameters  $f, s_1$  and  $k$  (proportion of financial form of saving, saving-income ratio and productivity of investment respectively). Of course, interest rate policy also determines F *via* the parameters  $f, s_1$  and  $s_2$ . In this demand following model, the growth of financial structure need not grow elaborate enough to extend financial services access to the vulnerable sections of the economy. The main impediment here lies in the high cost of providing financial services to the weaker and excluded sections of the economy. In this demand following model of financial development, output Y depends exclusively on investment and productivity of investment  $k$  from relation (3) above.

**3.3. Output Multiplier in the Supply Leading Model (SLM) of Financial Development and Financial Inclusion**

In this model (1) and (2) of the earlier model are rewritten as:

$$S = s F \dots \tag{5}$$

$$\text{and } F = f_1 Y + f_2 i \dots \tag{6}$$

In this model, financial development takes place with financial intermediaries not only collecting saving but also spreading financial literacy and financialization of physical form of saving for rural and weaker sections of the economy. This leads to creation of not only financial access, but also credit extension to the hitherto financially excluded sections of the economy. There are several schemes in this category as summarized by Mundra, 2016[9] including the Jan Dhan Yojana scheme suggested by the Prime Minister mentioned by Agarwal etc. al 2017[10]. This financial inclusion role of the financial structure can be captured by rewriting equation (2) above as:

$$C = c F \dots \tag{7}$$

Where C is the credit extended and the resulting financial assets created as a proportion of the financial saving F. Accordingly, the output equation (3) gets rewritten as:

$$Y = k I + C \dots \tag{8}$$

Then, substituting for C from (7) and for F from (6) and simplifying we get (9)

$$Y = [k / (1 - k c f_1)] I + [k c f_2 / (1 - k c f_1)] i \dots \tag{9}$$

$$Y = A I + B i \tag{9,}$$

It is clear from (9) that when compared with (3), the term:

$$k / [1 - k c f_1] > k \tag{10}$$

In view of the fact that  $0 < k, c, f_1 < 1$ . Since  $c > 0$ , the second term in (9) is also positive. The product  $k c f_1 < 1.0$  and hence the multiplicand A of I in (9') is greater than that of I in (3). Financial inclusion causes higher investment productivity and higher output, finds a study by McGrettan, 1998[11]. Thus, the supply leading model of financial development improves financial inclusion by extending credit to the hitherto unbanked and converts physical saving into financial saving. As a result, the higher the final saving is as part of total saving, the higher the productivity of investment is.

**3.4. Financial Inclusion Bolsters the Growth Rate**

To make up what lacks, let's just break up the facts. The simple ‘AK’ growth model following Mc. Grettan, 1998[12] permits us to do this. Just write:

$$Y = A K \tag{11}$$

$$I = K_t - (1 - d) K_{t-1} \tag{12}$$

and

$$h \cdot s \cdot y = I \tag{13}$$

where, Y = Output, K = capital stock (t= current period and t-1 = one period lagged), A = Productivity of capital (Y / K =  $\Delta Y / \Delta k$ ), s = Saving as proportion of Y, h = Proportion of saving that is financial and by definition (1-h) is the proportion of physical form of saving.

Then, the long run growth rate  $g = (Y_t / Y_{t-1}) - 1$ . is always

equal to  $(K_t / K_{t-1}) - 1$ . This implies that the real time growth rate 'g' after substitution of the above relations equals:

$$g = A \cdot h \cdot s - d \tag{14}$$

The faster the financial inclusion, the greater the 'h' and the lower  $(1 - h)$  would be. As an illustrative example, if  $A = 0.5$ ,  $h = 0.8$ ,  $s = 0.3$  and  $d = 0.05$ , then the growth rate

$g = Ahs - d = 0.5 \times 0.8 \times 0.3 - 0.05 = 0.07 = 7$  percent. The higher the A, h and s are, but the lower the d is, the higher the growth rate 'g'.

Financial inclusion, thus, fosters growth in three different ways and they are: (i) it reduces physical saving by converting it into financial saving; (ii) this increases the availability of saving for financial investment and (iii) it contributes to improving productivity of capital.

### 3.5. Benefits of "Banking the Unbanked" using the Algebra of Little Triangle and Rectangle

A team of six economists, in their study by Agarwal *et al*, 2017[12] have recently reported that they find some sure evidence suggesting that the program of "Banking the Unbanked" directly benefits 255 million formerly unbanked individuals by November 2016. "About 77% of the new accounts maintain a positive balance with the average monthly balance of Rs.482, which is about 60% of the rural poverty line in India". Since this evidence suggests that there is an increase in the financial saving of the hitherto unbanked families, we can easily demonstrate and measure the benefits using the Harbergerian little triangle and rectangle as reported below in Figure-1:

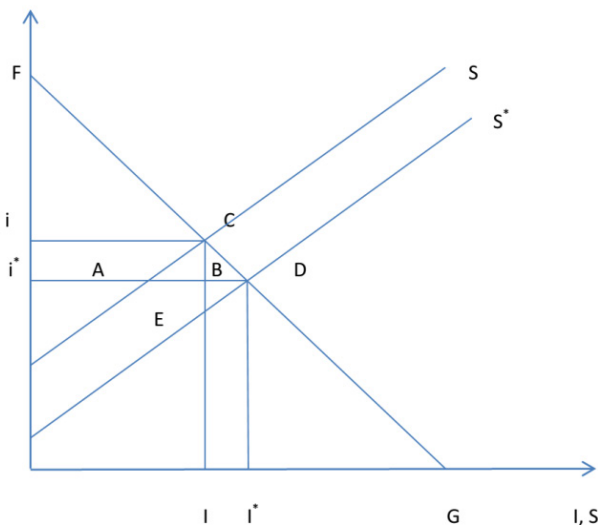


Figure 1. Banking the Unbanked: Measuring Benefits

Let FG be the investment schedule and let S (S\*) be the supply of saving schedules before and after financial inclusion. On the vertical axis interest rate is measured. Let us say before banking the unbanked, S is the supply of savings line and S\* is the new savings line after banking the

unbanked. As the supply of financial savings increases it amounts to a downward shift in the 'S' line to 'S\*' line. The investment gains are from I to I\* and the decline in the cost of investment is the rectangle 'A' plus the triangle B. While "A" is a gain to the economy due to the PMJDY, the triangle B is exclusive gain to the unbanked as a result of banking inclusion. Let the interest elasticity of investment be  $e = \Delta I / I / \Delta i / i$ . Let us denote  $\Delta i / i = \delta$ . Then  $\Delta I = \delta \cdot e \cdot I = I^* - I$ . Then,  $\Delta i = \delta i$  and  $I = I^* - e \delta I$ . Then the respective areas A and B are as follows:

$$B = \frac{1}{2} \Delta i \cdot \Delta I \text{ which is approximately equal to } \frac{1}{2} (\delta i^*) (e \delta I^*)$$

$$B = \frac{1}{2} e \delta^2 i^* I^* \tag{15}$$

$$A + B = \Delta i \cdot I + \frac{1}{2} \Delta i \cdot \Delta I = \delta i^* I^* - \frac{1}{2} e \delta^2 i^* I^*$$

$$= \delta i^* I^* (1 - 1/2 e \delta) \tag{16}$$

For convenience, if we assume that  $e=1$  and  $\delta = 10\%$  then  $B=0.5$  percent of gross investment cost reduction and  $A+B = 9.5\%$  of investment cost reduction given to the economy as a whole. The rectangle plus the triangle may look like a very small magnitude. But in reality, for the economy as a whole the gain by way of reduction in investment cost is nothing but increase in investment in the obverse. Thus, banking the unbanked program of the financial inclusion strategy yields nationwide benefits by way of investment cost reduction (equivalent to more investment). Similarly, the strategy yields the benefit of converting the physical saving into financial saving which is tantamount to increase in investment.

## 4. Summary and Some Concluding Remarks

The topic of financial inclusion has attracted enormous attention, in recent years, for the simple reason that it plays a significant role in fostering economic growth and financial stability. "The vision...envisaged by the Committee on Medium Term Path to financial inclusion is that by 2021, empowered by formal finance over 90 percent of the hitherto underserved sections of society would become active stakeholders in economic progress." It's found in Mundra, 2016[13]. Financial inclusion helps achieve a faster growth where macro-saving I is not reduced but financial saving is increased as a proportion of macro-saving and with productivity of financial investment being convincingly higher. In advance of the demand, the supply leading strategy of financial development improves financial inclusion through the creation of two institutional frameworks - the financial tripod and the policy tripod.

This study clearly demonstrates analytically that financial inclusion can clearly create faster growth. Firstly, a multiplier model is used to demonstrating as to how financial inclusion creates more output than in case of a demand following model of financial development. Secondly, the most popular "AK" growth model framework

is used to analytically demonstrating the superiority of financial inclusion in creating faster growth. Thirdly, using simple algebra of the well-known Harberger- little triangle and rectangle, the superiority of financial inclusion is numerically demonstrated as an integral component of the supply leading financial development strategy.

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