Neo-Dualism: Formal-Informal-Agriculture Interactions in India

Kasturi Sadhu[1] and Saumya Chakrabarti[2]

[1]Affiliation not available
[2]Visva-Bharati Santiniketan India

October 25, 2018

Neo-Dualism:

Formal-Informal-Agriculture Interactions in India

Kasturi Sadhu[1]

And

Saumya Chakrabarti[2]

[1] Research Scholar, Department of Economics and Politics, Visva-Bharati (University), Santiniketan-731235, West Bengal, India. Email: mrskasturighosh@gmail.com.

[2] Associate Professor of Economics, Department of Economics and Politics, Visva-Bharati (University), Santiniketan-731235, West Bengal, India. Email: saumya_chakrabarti@biari.brown.edu and saumya.chakrabarti@visva-bharati.ac.in. phone number +91-7602865059. *Corresponding author*.

Abstract: This paper deals with the increasingly debated issue of informal sector of India - its evolution and/or involution. It highlights the spread of informality in India, the growing formal-informal and in particular intra-informal sector divides, the roles of agriculture and especially formal sector in this context, and the probable policy responses. Dominant discourses consider that, prevalence of informal sector could be mitigated through economic growth complemented by some institutional reforms. But, our observations on India show that, the informal sector is expanding in tandem with overall growth driven by the formal sector. By introducing a macro-model of intersectoral-relations, we have tried to provide an explanation for such an expansion of informal sector. Propositions of this model are, then, empirically tested by using Indian (sub-national) state- and (informal sector) firm-level data. It is found from our analysis that, an expansion of formal sector engenders a spread of informality along with its diverse/dual (intra-sectoral) tendencies of progression as also persistence. Growth of formal sector extracts resources from traditional uses (agriculture as also non-agriculture). This resource-extraction compels traditional population to diversify and/or migrate towards informal sectors. While a few can manage a refuge in advanced informal activities, a larger section is compelled to get engaged in petty/small segments. Our study, thus, proposes that expansion of formality itself is producing a new form of dualism going beyond the traditional industry/urban–agriculture/rural divide and the formal–informal divide. This neo-dualism calls for a dual policy response. While advanced informal activities could benefit if their linkages with formal sector are strategically induced, petty informal segment has to be organised in a planned way and an effective institution could be a cluster. Fundamentally, in this paper, we evaluate the discourse of inclusive growth and posit the need and basis for organising the excluded as clustered entity rather than scattered nomads.

1. Introduction

Conventional development discourses conjecture that, capital accumulation based economic growth is capable enough to bring (sooner or later) all economic actors into the circuit of modern capital (Lewis, 1954). Prevalence of informal sector too could be mitigated through this economic growth complemented by some institutional reforms/inducements (Porta and Shleifer, 2014). Thus, with growth of modern capitalistic formal sector, informal sector would either wither away or be incorporated into this formal sector or at least be able to enter into a phase of tortuous transition by exploiting formal-informal positive linkages (Ranis and Stewart, 1993; Maloney, 2004; Bardhan, 2009; Marjit and Kar, 2011; Beladi et al, 2016). Hence, there could be a probable convergence between formal and informal sectors.

However, there are critical voices too. These researchers propose that, informal sector mostly remains outside the circuit of capital and is non-functional for formal sector (Nun, 2000; Sanyal, 2007; Chatterjee, 2008). Besides, some recent works (Breman, 2013; Bhattacharya et al, 2013; Chakrabarti, 2016; Raj and Sen, 2016) also opine that, although a section of (the Indian) informal sector is showing marks of progression, an overwhelmingly large part persists in limbo as a surplus population.

With this contesting theoretical background, if we look at Indian data (Table[3] 1), we find that, apparently, contrary to the belief of the mainstream economists, almost all the segments of informal sector (henceforth, INFS[4]: with segments such as, small-firm/self-employment/OAE[5]

---

[3] The authors are grateful to Amit Bhaduri for the idea of Tables 1 and 2.
[4] Here, INFS includes informal manufacturing and services without construction (as per availability of NSSO data).
[5] Self-employment refers to own account informal enterprise (OAE) without any hired labour – on a fairly regular basis.

and large-firm/establishment[6] of rural-urban locations) are expanding in terms of sectoral size, with growth of the economy and that of the formal sector (henceforth, FS) in particular. Table 1, presenting shares of sectoral workforce in total workforce of India (considering only major 19 states[7]) for different economic sectors, shows that the highest share of workforce is still under agriculture, though it is reducing over time. On the other hand, all the segments of INFS, formal manufacturing sector and share of other workforce are rising. From this table, it seems that a large part of the workforce moves from agriculture to other economic sectors, in general, and to different segments of INFS, in particular. Considering the fact of high growth of population and workforce over time, we can say that an increasing share of sectoral workforce in INFS clearly implies an increasing absorption of workers in that sector in absolute terms too.

Another important issue is observed from Table 2 which presents partial labour productivity levels of different economic sectors of India. This shows that the productivity level of formal manufacturing sector is very high compared to agriculture and INFS. The productivity levels of different INFS segments have undoubtedly improved with other economic sectors, but at a very slow pace. Consequently, the absolute difference between the labour productivity levels of INFS and that of the FS has been increasing over time. Not only that, the absolute differences in the productivity levels of different INFS segments (rural-urban, self-employment and establishment segments) have also been increasing.

A more striking observation, however, is that the labour productivity level of rural self-employed INFS sector is lower than other economic sectors, even agriculture (Table 2); but the share of

---

[6] Establishment refers to INFS enterprises using at least one hired labourer – on a fairly regular basis.
[7] The selected 19 states are: Andhra Pradesh, Assam, Bihar (including Jharkhand), Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (including Chhattisgarh), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh (including Uttaranchal), and West Bengal.

workforce in this sector has been large and also increasing (Table 1). Other informal segments are in a better position than agriculture in terms of labour productivity. So, apparently it seems that, in the process of sectoral redistribution/migration of workforce away from agriculture to other sectors, both pull and push factors are working together. The part of the agricultural workforce that moves into high productivity formal manufacturing sector and rural-urban INFS establishments may be due to the pull factors (like, pull from FS etc). On the other hand, push factors (like, overcrowding of workers in agricultural sector, fall in per capita agricultural relative-income vis-à-vis other sectors, relative and sometimes even absolute income deflation and dissociation of small farmers from means of farming etc.) force the agricultural labourers and petty farmers to get engaged in less productive rural OAE segment (and in urban OAE too).

Table 1: Shares (%) of sectoral workforce in aggregate workforce in India over time

Year	Informal Rural OAE	Informal Rural Estt.	Informal Urban OAE	Informal Urban Estt.	Informal Sector	Organised Manuf. Sector	Agricultural Sector	Other Sectors
1999-2000	8.40	1.34	4.03	5.31	19.02	2.03	61.01	17.88
2010-11	9.16	2.51	5.43	5.99	21.96	2.71	51.93	22.27

Source: Calculated from different rounds of National Sample Survey Office (NSSO) reports on Non-farm Informal sector, Employment-Unemployment, and of Annual Survey of Industries (ASI) reports.

Note: Other sectors include mainly formal service sector, formal-informal construction sectors, along with few others.

Table 2: Partial Labour Productivity (annual) of different economic sectors in India over time

(in Rs at constant 1993-94 price)

Year	Informal Rural OAE	Informal Rural Estt.	Informal Urban OAE	Informal Urban Estt.	Informal Sector	Organised Manuf. Sector	Agricultural Sector	Other Sectors
1999-2000	8248	15427	14760	25161	14137	165871	10463	57668
2010-11	10271	21784	17016	30597	18051	299593	14858	100462

Source: Calculated from different rounds of NSSO reports on Non-farm Informal sector, Employment-Unemployment, and of Annual Survey of Industries (ASI) reports.

Note: Labour productivity is calculated by dividing sectoral GVA with sectoral workforce. Other sectors include mainly formal service sector, formal-informal construction sectors, along with few others.

With this crucial backdrop on the operations of the push and pull forces reallocating labour and thereby expanding the INFS along with its deepening (intra- and inter-sectoral) fissures, we posit our basic questions: Why does the informality persist and even expand in India, despite the growth of the overall economy and that of the formal sectors, in particular? Does the expansion of the FS affect the behaviours of the different segments of INFS? Is the capital centric growth of the economy, itself, inducing a divergence among different economic sectors, especially, between the FS and INFS, and within the different INFS segments as well?

In this article, to deal with these issues, we have first, introduced a theoretical macro-model along Structuralist lines (Kalecki, 1934 and 1954; Taylor, 1983; Bhaduri, 1986; Bagchi, 1988; Bose, 1989; Dutt, 2001). This model helps us identifying the probable factors explaining the expansion of informality along with its growing (intra-sectoral) heterogeneities in the Indian context. A comparative static analysis capturing some recent changes in the Indian economy is

presented in the next section. Subsequently, some medium and long-run implications of the model are discussed. In section 5, we test the propositions derived from this modeling endeavour by undertaking a comprehensive empirical exercise using information from National Sample Survey Office (NSSO), Government of India, which provides macroeconomic data with micro dimensions as well. Finally, certain policy implications of this study are discussed while concluding the paper.

2. The Structure of the Model

As mentioned earlier, our framework is built along Structuralist lines. Further, we have revisited as also revised the analytical frameworks dealing with the problem of informality, in general, and the issue of formal-sector – agriculture – informal-sector relations, in particular[8] by incorporating a heterogeneous INFS and a dichotomised agricultural sector. This is a novelty of our model (putting a heterogeneous INFS in a Structuralist macro-framework of inter-sectoral interactions). However, our model discusses mainly a short-run situation and short-run changes along with some tentative medium- and long-run implications.

2.1. The basic features of the sectors

There are three broad sectors in our abstract economy: (1) capitalistic FS driven by accumulation motive; (2) A non-capitalist INFS with two segments - (a) petty or traditional INFS (abbreviated as INFSp) consisting of mainly rural and small firms, devoid of surplus over subsistence and (b)

---

[8] ILO, 1972, 2014; Mellor, 1976; Moser, 1978; Ranis and Stewart, 1993, 1994; De Soto, 2000; Harriss-White and Gooptu, 2001; Lanjouw and Lanjouw, 2001; Marjit, 2003; Maloney 2004; Chen, 2007, 2012; Haggblade et al, 2007; Sanyal, 2007; Chakrabarti et al, 2009; Chakrabarti, 2013; Kanbur, 2013. A very comprehensive review could be found in Meagher, 2013.

modern or advanced INFS (INFSm) consisting of mainly urban and large units, producing surplus over subsistence; (3) dichotomised agricultural sector[9] - (a) capitalist/modern agricultural sector (abbreviated as MAGR) producing high-value-crops (HVC) like high quality cereals, fruits, flowers, vegetables, agro-fuel feedstock, (b) non-capitalist/traditional agriculture (abbreviated as TAGR) producing mainly coarse food-crop.

FS is characterized by excess capacity and unemployment with demand determined output and cost determined mark-up pricing (in an imperfect market set-up). FS produces mainly investment and consumption goods for its workers and capitalists. It also produces machinery, and inputs like pesticides, fertilizers, tractors etc for the agricultural sector as a whole.

While capitalistic MAGR behaves just like FS, non-capitalistic TAGR resembles INFS as discussed below.

In INFS, production takes place using indigenous inputs, simple tools and surplus/migrant labour. It requires non-farm consumer goods and inputs including minor instruments which are produced indigenously.

The modern INFS i.e. INFSm may hire (surplus) labour to run its production process. Its product price is cost-determined. An endogenously determined mark-up (as detailed subsequently) over average cost is also introduced in our model for determining INFSm price. As demand expands, price increases, raising the mark-up as well, in the short run; this, in turn, induces an expansion of output and employment via hiring of additional labour and using additional indigenous resources. However, the surplus output/income of INFSm is assumed to be used for betterment

---

[9] This framework has some apparent similarities with that of Ranis and Stewart, 1993; but the outcomes are starkly different, as the underlying characteristics and dynamics are quite dissimilar.

of standard of living rather than accumulation; even if it is reinvested, it is done to improve future consumption.

The INFSp is the other segment of the non-capitalistic informal sector. The INFSp is consisted of relatively small and petty production units compared to INFSm and use family labour to run production. There is no surplus (mark-up) over cost of production and price is fully cost-determined. Cost of production in this segment is assumed to be little higher or equal to the subsistence living.

2.2. Linkages between the sectors

The FS and MAGR are assumed to constitute a composite capitalistic entity. Hence, in our following analysis FS actually stands for this composite entity (unless mentioned otherwise). Conversely, the non-capitalistic INFS (both modern and petty) is closely associated with the non-capitalistic TAGR.

The modern and petty INFS acquire food and other agro raw materials from the TAGR, and not from the MAGR; conversely, the TAGR purchases only the INFSp products and not the INFSm output (a simplifying assumption).

Further, the TAGR output is acquired by the big traders of the modern informal sector (INFSm) at a contracted fixed price; the actual petty-farmer of TAGR does not have direct access to the INFSm market. However, TAGR-INFSp interactions are much closer: The TAGR sells a part of its output in the open market, which is directly purchased by the INFSp for consumption as well as production; conversely, TAGR acquires inputs and outputs directly from the INFSp. The TAGR-INFSp interaction is, thus, free from any intervention of big/powerful intermediaries.

Next, we propose that the TAGR has to depend also on the FS, over and above its interactions with the INFSp, mainly for agricultural inputs such as modern machinery, seeds, fertilizer, pesticides etc. Further, these inputs are sold to the TAGR by the FS through direct channels (e.g. via the powerful dealers/traders etc)[10]. Thus, the TAGR purchases products of both FS and INFSp and the petty farmers of TAGR do not save.

On the other hand, we assume away direct interactions between the INFSm and INFSp to simplify our framework. However, the interaction between INFSm and FS must be acknowledged, though direct interactions between the FS and INFSp, if any, are ruled out (as the FS and INFSp are two extreme segments across commodity and technology scales, most likely, not dependent on each other).

We assume that there is a specific type of interaction between the FS and INFSm. First of all, we believe in a causal relation, former being the source of the effect on the latter. The FS is proposed to purchase the INFSm commodities and not the vice-versa. It is true that the INFSm uses some FS commodities, but it cannot be refuted that most of the commodities used by the INFSm are indigenously produced (see Bangasser, 2000, pp. 10). Therefore, we assume that the FS purchases finished products and various types of inputs from the INFSm via market exchange as well as sub-contracting; a constant fraction of the FS income is spent on the INFSm.[11] The FS worker consumes both FS and INFSm products; further, the FS uses both INFSm and FS products for production.

---

[10] In fact, in many cases, the FS products are thrust upon the TAGR petty-farmers using different types of socio-economic networks and political and technological instruments. All these generate asymmetric power relations in favour of the FS vis-a-vis the TAGR.

[11] The FS acquires cheap resources, wage-goods and even labour from the INFSm to maintain/increase its profit (Breman, 2013; also could be found in Harvey, 2003, chap. 4, in a much broader context).

Based on these, we go for the modeling exercise. This model is important not only to understand the FS-INFS-agriculture relations and the impacts of these interactions on the INFS, but also to identify the specificities of the (heterogeneous) INFS.

2.3. Working of the interlinked sectors

2.3.1. <u>The basic notations:</u>

1. FS output: Y_i

2. FS employment: L_i

3. FS money-wage: w_m

4. Price of FS output: p_i

5. Fixed nominal investment in FS: I^0

6. INFSm output: Y_u

7. Price of INFSm product: p_u

8. Surplus per unit of INFSm output: s

9. Price of INFSp product: p_r

10. Aggregate external demand from the FS for the *net* output of INFSm: D_u

11. Supply of INFSm net-output: S_u

12. Aggregate external demand from the TAGR for the *net* output of INFSp: D_r

13. Supply of INFSp net-output: S_r

14. Fixed/pre-set amount of TAGR-output sold to the big traders of INFSm: f^0

15. Fixed contracted price of f^0: p_f^0

16. Fixed TAGR-output: F^0

17. Market determined price of the TAGR output sold to INFSp: p_f^l

18. Fraction of TAGR farmers' income spent on the FS output: r

19. Constant amount of labour needed to produce one unit of FS output: a_{li}

20. Constant amount of INFSm input needed to produce one unit of FS output : a_{ui}

21. Constant amount of INFSm output exchanged against per unit of FS output: b_{ui}^0

22. Constant amount of INFSm output needed to produce one unit of INFSm output: b_{uu}^0

23. Constant amount of INFSp output needed to produce one unit of INFSp product: b_{rr}^0

24. Fixed amount of TAGR-product used as food (for labour) and non-food input (for production) per unit of INFSm output: a_f^{u0}

25. Amount of TAGR-product used as food (for labour) and non-food input (for production) *per* unit of INFSp output: a_f^r

2.3.2. <u>Price and output determination in formal sector (FS):</u>

In the presence of excess capacity and unemployment in the short-run, formal sector's output/income (Y_i) is demand-determined and hence, we have the following output-determination equation as:

$$Y_i = \{(w_m/p_i).L_i\} + (I^0/p_i) - \{(p_u.b_{ui}^0.Y_i)/p_i\} + [r(p_i/p_r).\{p_f^l.(F^0\text{-}f^0)+(p_f^0.f^0)\}/p_i] \quad \ldots\ldots..(1)$$

The workers and the capitalists of the FS purchase inputs and outputs from both FS and INFSm. So, we have the total real spending of the workers and capitalists on the FS output as their aggregate/overall real spending $[\{(w_m/p_i).L_i\} + (I^0/p_i)]$ minus their total real spending on the INFSm $\{(p_u.b_{ui}{}^0.Y_i)/p_i\}$. This $\{(p_u.b_{ui}{}^0.Y_i)/p_i\}$ is actually a leakage from the aggregate expenditure of the FS by its own workers and capitalists.

A fixed/pre-set amount of TAGR-output (f^0) is sold to the big traders of the INFSm at a fixed/contracted price $(p_f{}^0)$; this is used by the INFSm itself for consumption as well as production. The other part of the TAGR-output i.e. the part (F^0-f^0) is sold in the local/rural market to the INFSp at a market-determined price $p_f{}^l$; usually, $p_f{}^l < p_f{}^0$ i.e. the INFSm traders collect TAGR output at a price that is higher than the local/rural option. Thus, the income of the TAGR farmers can be represented as $[p_f{}^l.(F^0-f^0)+(p_f{}^0.f^0)]$

A part (r) of the TAGR farmers' income is spent on the FS for modern inputs having a price p_i. Another part $(1-r)$ of this TAGR income is spent on the INFSp for petty consumables at a price p_r. Now, $r = r(p_i/p_r)$ with $r_1<0$; as (p_i/p_r) rises, the fraction r falls. $[r(p_i/p_r).\{p_f{}^l.(F^0-f^0)+(p_f{}^0.f^0)\}/p_i]$, hence, represents the amount of FS output demanded by the TAGR.

Further, as, excess capacity and unemployment in the FS leading to a fixed labour/output ratio, we assume that, in the FS, Y_i/L_i is constant and this is equal to 1 (via suitable choice of unit). Hence, equation 1 can be rewritten as:

$$Y_i = \{(w_m/p_i).Y_i\} + (I^0/p_i) - \{(p_u/p_i).b_{ui}{}^0.Y_i\} + [r(p_i/p_r).\{p_f{}^l.(F^0-f^0)+(p_f{}^0.f^0)\}/p_i] \quad \ldots\ldots\ldots\ldots(2)$$

Next, assuming mark-up pricing by the FS-firm, the FS price is: $p_i = t.[w_m.a_{li} + p_u.a_{ui}]$;

here, fixed mark-up t>1 and t captures the average fixed cost, average cost of non-labour input derived from the FS itself, and average profit. We also assume that, the FS money-wage is indexed to the INFSm product-price.

Hence, $w_m / p_u = e$ (a constant).

Again, we assume, for simplicity, $a_{li} = a_{ui} = 1$.

Hence, $p_i = t.[e.p_u + p_u] = t.(1+e).p_u$ …………. (3)

So, $p_u/p_i = 1/\{t.(1+e)\} = d$ (a constant).

This implies $p_i = p_u/d$; and also

$w_m/p_i = w_m/(p_u/d) = d.e$ (as $w_m/p_u = e$, as above) $= c$ (say, a constant).

Although the FS wage is spent on both FS and INFSm products, it is indexed only to the INFSm product-price. However, given the mark-up pricing rule, this also fixes the FS product-wage (w_m/p_i). Thus, ultimately, FS money-wage becomes linked/ indexed to both FS and INFSm prices.

Hence, replacing (w_m/p_i) with c, (p_u/p_i) with d and p_i with (p_u/d) in equation 2, we have FS output as:

$Y_i = c.Y_i + d.I^0/p_u - (d.b_{ui}^0.Y_i) + [r\{p_u/(d.p_r)\}.\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}.d/p_u]$; with, $r_1<0$.

Finally, $Y_i^* = [(d.I^0/p_u) + r\{p_u/(d.p_r)\}.\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}.d/p_u] / (1 - c + d.b_{ui}^0)$ ………(4)

Hence, $Y_i^* = Y_i (p_u)$; with, $Y_{i1}<0$.

As p_u falls, p_i falls as well; this induces- (a) real investment in the FS and (b) the TAGR farmers' real income as well as its share that is spent on the FS. All these boost the demand (and so supply) for FS output.

2.3.3. <u>Price and output determination in modern INFS segment (INFSm):</u>

INFSm consists of (by definition) relatively large/modern INFS firms compared to the INFSp firms, and can generate/maintain a surplus over and above cost of production. As mentioned before, this surplus is assumed to be used for betterment of standard of living rather than accumulation. On the other hand, the TAGR output is essential for the INFSm.[12]

Given these traits, the INFSm price can be expressed by using the following equation:

$$p_u = s + (p_u.b_{uu}^{\ 0}) + (p_f^{\ 0}.a_f^{\ u0}); s > \text{or} = 0$$

From the above price-equation we get, $s = s(p_u/p_f^{\ 0})$; with, $s_1>0$.

If p_u rises, ceteris paribus, surplus of the INFSm firm rises as well.

Now, we take up the issue of output determination in this INFSm.

The components of aggregate demand for INFSm output (Y_u) are:

    a. External demand from the FS $(b_{ui}^{\ 0}. Y_i)$, as discussed earlier.

    b. Internal demand from the INFSm itself $(b_{uu}^{\ 0}.Y_u)$.

Thus, the aggregate external demand from the FS for the net output of INFSm (i.e. net of intra-sectoral use) is:

$$D_u = b_{ui}^{\ 0}.Y_i = b_{ui}^{\ 0}.[[(d.I^0/p_u) + r\{p_u/(d.p_r)\}.\{p_f^{\ l}.(F^0\text{-}f^0)+(p_f^{\ 0}.f^0)\}.d/p_u] / (1\text{--}c+d.b_{ui}^{\ 0})]$$

$$= D_u(p_u); \text{ with, } D_{u1}<0\ldots\ldots\ldots\ldots..(5)$$

This implies an inverse relation between D_u and p_u (as in Diagram 1 below). As p_u falls, p_i falls as well (given $p_u/p_i = d$, a constant, as derived above from equation 3) increasing the real investment in FS, on the one hand, and real income of TAGR-farmer and also the share of this

---

[12] Overwhelming majority of the Indian INFS firms (especially, the manufacturing ones) are found to be agro-based. A cursory look at the NSSO data would immediately show this. For details, see Chakrabarti, 2016, pp.182.

income spent on FS, on the other. The increasing investment on FS and/or demand of FS output increases the demand for INFSm input. Hence, we have a downward sloping D_u curve. On the other hand, with a rise in FS-investment, ceteris paribus, FS expands and demand for INFSm (D_u) rises as well. Hence, the D_u curve shifts upward.

Now, D_u determines the net output of INFSm, which gives rise to the corresponding gross output as well (via b_{uu}^{0} of section 2.2.1), given the following supply-side considerations:

There is no limiting capital in the INFSm; the non-farm inputs including minor implements and the non-farm consumer goods are produced indigenously; and, there is an availability of migrant labour from the TAGR. Thus, there is no inherent supply-constraint within the INFSm. As a result, the INFSm output becomes demand-determined, provided there is sufficient supply of TAGR product which is necessary for production and consumption in the INFSm (as mentioned earlier). The big traders (cum-hoarders) of the INFSm acquire a fixed amount of TAGR output (f^0) at a contracted price (p_f^0), and it is assumed that, initially, this f^0 amount is hoarded as a buffer stock. Further, as the TAGR-price rises, the traders release this TAGR-output having a regressive price expectation[13].

Given these conditions, a rise in p_u would have the following repercussions:

    a.   Indigenous resources of the INFSm are used more intensively and extensively.

---

[13] This TAGR-output could also be taken as a proxy for the overall (basic) resources, without which the INFS cannot exist. Now, given this condition, the cost of production in INFSm fundamentally depends on the TAGR price p_f^0. Hence, with a rise in p_u (given p_f^0), along with other indigenous resources (including labour), the utilization of the acquired TAGR-output (f^0) is also increased. Stated otherwise, with a rise in p_u, a higher portion of the TAGR-stock is put to use by the INFSm segment as a whole.

Alternatively, we could assume that, there are two segments within the INFSm: the traders/hoarders of TAGR-output and the rest (the actual users of TAGR-product). When p_u rises and thereby, production is induced in the INFSm, the demand for TAGR-output also rises; this, in turn, increases the selling price of the TAGR-product within the INFSm, inducing the traders/hoarders to release the TAGR-stock, given the unchanging buying price of the TAGR-output for them (i.e. p_f^0). Thus, with a rise in p_u, the supply of TAGR-output increases for the INFSm; the supply-constraint is relaxed.

b. Given the relation: $(p_u / p_i) = d$ (from equation 3), with this rise in p_u, p_i is pushed up (cost-push). Further, this rise in p_i, in its turn, reduces real income of the TAGR-farmers compelling them to migrate/diversify to the INFS. This increases the volume of labour supply in the INFSm.

c. Indigenous labour is used more intensively and the migrant labour from TAGR is also pulled/ attracted.

d. Buffer-stock of TAGR-output held by the traders is reduced and TAGR-output supply rises within the INFSm till the buffer-stock is not exhausted. It leads to an increase in employment and output of INFSm. This happens as a_f^{u0}, the amount of TAGR-product used as food by the labour and non-food input in production per unit of INFSm output, remains fixed and the TAGR-supply rises.

Given these, S_u, the supply of INFSm net-output (net of intra-sectoral use), responds positively to a rise in p_u, till there is buffer-stock of TAGR-output. Hence, $S_u = S_u(p_u)$; with, $S_{u1} > 0$, till the buffer-stock is there. After the buffer-stock of TAGR-output is exhausted, S_u becomes vertical, as shown in Diagram 1.

The interactions between D_u and S_u, as in Diagram 1, determine the INFSm equilibrium price (p_u^*) and the equilibrium net output (S_u^*), at E_0 (initially). From this equilibrium net output, the corresponding gross output could be derived by using the factor b_{uu}^0, as mentioned earlier.
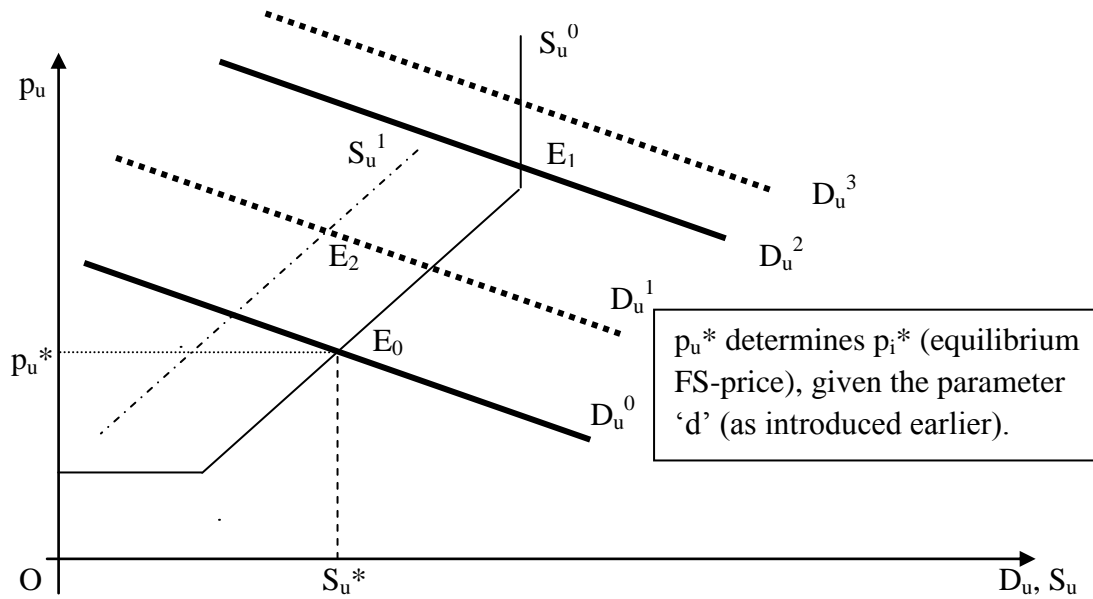
17

Diagram 1: Market for INFSm and Comparative Static Outcomes

Inside the box in the diagram:

p_u^* determines p_i^* (equilibrium FS-price), given the parameter 'd' (as introduced earlier).

Axis and curve labels: p_u, S_u^0, S_u^1, E_1, E_2, E_0, p_u^*, D_u^3, D_u^2, D_u^1, D_u^0, O, S_u^*, D_u, S_u

2.3.4. <u>Price and output determination in traditional INFS segment (INFSp):</u>

The INFSp consists of smaller/traditional firms and hence, it is not capable of earning a surplus, over and above the cost of production. On the other hand, as the TAGR-output is fixed at F^0 in the short-run and a fixed/pre-set amount f^0 is sold to the INFSm, only a residual (fixed) amount (F^0-f^0) is available for the INFSp at a market-determined (flexible) price p_f^l.

Given these traits, the INFSp price (p_r) can be expressed by using the following equation:

$$p_r = (p_r.b_{rr}^0) + \{p_f^l.a_f^r(p_r/p_f^l)\}; \text{ with, } a_{f1}^r > 0 \ \{a_f^r \text{ rises with a rise in } (p_r/p_f^l)\}.$$

$$\text{Hence, } (p_r/p_f^l) = [\{a_f^r(p_r/p_f^l)\} / (1 - b_{rr}^0)] \quad \ldots\ldots\ldots(6)$$

The structural difference between INFSm and INFSp is that, while the INFSm is able to maintain $a_f^u = a_f^{u0}$ and with a fall in p_u only the average surplus s falls, in the INFSp, with a fall in p_r (ceteris paribus) a_f^r has to fall. Thus, while in the INFSm, there is an economic shock-absorber (s), in the INFSp, there is no such cushion.

Now, we take up the issue of output determination in the INFSp.

The components of aggregate demand for INFSp output (Y_r) are:

a. External demand from the TAGR [the part (1-r) of TAGR income that is spent on the INFSp].

b. Internal demand from the INFSp itself ($b_{rr}^0.Y_r$).

Hence, the aggregate external demand from the TAGR for the net output of INFSp (i.e. net of intra-sectoral use) is:

$D_r = [(1 - r).\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}/p_r]$; with $r = r(p_i/p_r)$ and $r_1<0$

(as discussed in the context of equation 1).

Hence, $D_r = [\{1 - r(p_i/p_r)\}.\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}/p_r]$; with $r_1<0$.

$$= D_r(p_r); D_{r1}<0. \quad …………(7)$$

As p_r falls, ceteris paribus, the real income of TAGR-farmer and its share that is spent on the INFSp both rise; hence, we get a downward sloping D_r curve. On the other hand, as p_i rises, r falls and hence, (1-r) rises; a higher portion of TAGR-farmers' income is spent on INFSp product. Consequently, with a rise in p_i, D_r rises as well; and the corresponding curve shifts to the right, as shown in Diagram 2 below.

Next, D_r determines the net output in INFSp, which gives rise to the corresponding gross output as well (via b_{rr}^0 of section 2.2.1), given the following supply-side considerations:

In the non-capitalistic INFSp, though production takes place by using indigenous resources and migrant labour, TAGR output is necessary for this INFSp. But, as said before, in the short-run, only (F^0-f^0) amount of TAGR output is available for the INFSp at a market-determined (flexible) price p_f^l. This supply-constraint has some obvious repercussions that will be discussed later.

For the time being, however, if we ignore this supply-constraint, we could propose a function for the net-supply of output in INFSp (net of intra-sectoral use) as: $S_r = S_r(p_r)$; with $S_{r1} > 0$. As p_r rises, the indigenous resources and labour of INFSp are used more intensively and extensively, the impoverished farmers (due to reduction in their real income[14] in terms of INFSp-output) migrating/ diversifying away from TAGR are also pulled/attracted; consequently, production in the INFSp expands and the level of its net-output rises. On the other hand, if FS-price p_i rises, ceteris paribus, TAGR-farmers' real income in terms of FS-output falls[15]. This farmers' distress leads to out-migration from TAGR towards INFSp. Consequently, the supply of net-output, i.e. S_r increases and the corresponding curve shifts to the right, as in Diagram 2 below.

The interactions between D_r and S_r, as below, determine the INFSp equilibrium price (p_u*) and the equilibrium net output (S_r*), at E_0 (initially). From this equilibrium net output, the corresponding gross output could be derived by using the factor b_{rr}^0, as mentioned before.
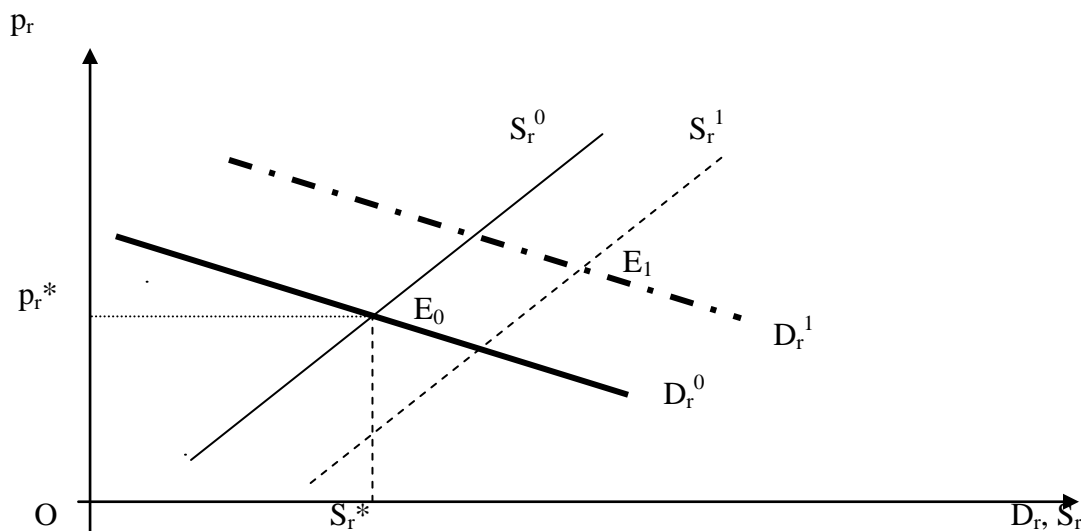

Diagram 2: Market for INFSp and Comparative Static Outcomes

---

[14] As TAGR farmers have to purchase the INFSp products for production and consumption purposes.
[15] As TAGR farmers have to purchase modern inputs from the FS.

3. Comparative Static Analysis: Expansion of the Informal Sector - Push and Pull Factors

Let us discuss the short-run impacts of an expansion of the FS on the sectoral volumes and incomes of the different segments of INFS. As FS-investment rises, the FS expands raising the level of demand for INFSm output. Hence, D_u^0 curve shifts up to D_u^1 (Diagram 1), leading to an increase in the price of INFSm. This rise in p_u has both push and pull effects as below:

With a rise in p_u, there has to be a cost-push increase in p_i as well. Consequently, as, ceteris paribus, the TAGR-farmers' aggregate real income $\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}/p_i$ falls, there is a distressed/pushed migration/diversification from the TAGR to the INFSm. This expands the volume of labour supply to the INFSm. On the other hand, as p_u rises, there is an intensive and extensive utilization of indigenous resources in INFSm, an increased TAGR-output supply within INFSm due to a reduction of buffer-stock, and a more intensive utilization of indigenous labour along with a pull for the migrant population pushed out of TAGR.

All these push and pull factors drive up the levels of employment and output in the INFSm[16]. Furthermore, though the price of INFSm product (p_u) rises, the petty TAGR-farmers cannot get a higher price than the pre-set/contracted one (p_f^0) due to the presence of the big intermediaries. Consequently, the INFSm gains also in terms of real income and real surplus −'s'. Thus, the FS

---

[16]A model on nonfarm expansion through push from agriculture and pull form capitalist sector is also developed by Foster and Rosenzweig (2004). But, there are two basic departures of our model from theirs: (1) they propose, capital is moving towards agricultural labour to engage the low-wage labourers into the non-farm activities, whereas ours is a reverse movement; (2) they are ignoring a larger segment of the economy i.e. our petty INFS in which large number of migrant labourers are entering mainly due to a push from agriculture (and there is no pull from FS as such).

expansion is inducing the INFSm, in terms of both sectoral-volume and real income/surplus. Both the push and pull factors are working conjointly to develop the INFSm.

If, however, we start from an equilibrium situation like E_1 (instead of E_0), as in Diagram 1, and introduce an expansion of the FS, the demand for INFSm rises and D_u^2 curve shifts up to D_u^3 raising the INFSm price (p_u). This rise in INFSm price, in its turn, raises the price of FS output (p_i) reducing the real income of the TAGR-farmers. Farmers' distress induces a pushed migration/diversification out of TAGR. But, this migrant/diversifying labour cannot be absorbed in the INFSm, as the buffer-stock of TAGR-output held within INFSm is already exhausted. That is, now, we have a binding TAGR-constraint for INFSm. Therefore, in the absence of TAGR-buffer-stock, even a rise in p_u cannot increase the levels of output and employment in the INFSm, given the TAGR-supply and the fixed per unit requirement of TAGR-output (i.e. a_f^{u0}) by the INFSm; only the real income/surplus (s) of INFSm rises. Furthermore, the distressed farmers have no other option but to throng the INFSp.

Let us now turn to the INFSp. Using Diagram 1, same as before, we can say as FS-investment rises, there is a fall in the TAGR-farmers' aggregate real income $\{p_f^l.(F^0-f^0)+(p_f^0.f^0)\}/p_i$ via cost-push increase in p_i. Consequently, there is a distressed/pushed migration from the TAGR to the INFSp, or at least a multi-tasking and increased self-exploitation by the TAGR-farmers. These are especially true when the buffer-stock of TAGR-output held by the INFSm traders is fully exhausted and there is no scope for this migrant labour to get engaged in the INFSm. This expands the volume of labour supply to the INFSp inducing INFSp production by using other underutilized indigenous resources as well. Thus, in terms of Diagram 2, the net supply of INFSp output, i.e. the S_r curve is pushed to the right from S_r^0 to S_r^1. However, this is the case while we ignore the supply-constraint put by the TAGR.

On the other hand, as p_i rises, a higher portion of the TAGR-farmers' income (1-r) is spent on the INFSp product. Hence, as per Diagram 2, the net demand curve of INFSp output i.e. D_r^0 curve too shifts to the right.

All these push and pull factors drive up the levels of employment and output in the INFSp. However, the price of INFSp product (p_r) may rise/fall/remain the same depending on the extent of shifts in D_r and S_r (as is clear from Diagram 2).

Next, we bring in the crucial aspect of TAGR-output supply constraint to the INFSp. As the FS expands, INFSp-employment (L_r) and output expand as well (as seen just above). But, now, TAGR-supply to the INFSp is given at $(F^0 - f^0)$.

TAGR-supply remains fixed at $(F^0 - f^0)$ as: (a) f^0 is pre-contracted/fixed before or at harvest; (b) total TAGR output remains the same, as only the surplus labour, having zero marginal-productivity, out-migrates; (c) aggregate own-consumption of TAGR remains the same, as the existing per capita intake in TAGR is very low and migration actually provides a scope for improving that; and hence, (d) combining (b) and (c), we can say that the marketable surplus (F^0) remains the same.

All these imply, from the food-market equilibrium condition we get the subsequent crucial outcomes.

$$(F^0 - f^0) = \{a_f^r(p_r/p_f^l).L_r\}; \text{ with } a_{f1}^r > 0 \ldots\ldots(8)$$

If L_r has to rise via migration/diversification as a result of an expansion in the FS, a_f^r has to fall to maintain food-market equilibrium for the INFSp; hence, (p_r/p_f^l) has to fall. Thus, a rise in p_r has to be less than the rise in p_f^l. p_f^l rises due to an increased demand for TAGR-output, given an expansion of output and employment in the INFSp and given the TAGR-supply for this INFSp.

This could be captured by Diagram 3 through a shift in the food market equilibrium from E_0 to E_1.

Stated otherwise, when there is a distress-driven expansion of the INFSp, within the INFSp as well, there is a deteriorating standard of living, given the TAGR supply-constraint in particular and the overall resource-constraint, in general.

Thus, quite disturbingly, when the FS expands, employment and output expand in the INFSp, although the corresponding real income in terms of TAGR-output (p_r/p_f^l) reduces and the standard of living $(a_f^r$ being a proxy for that) deteriorates in this INFSp sector.
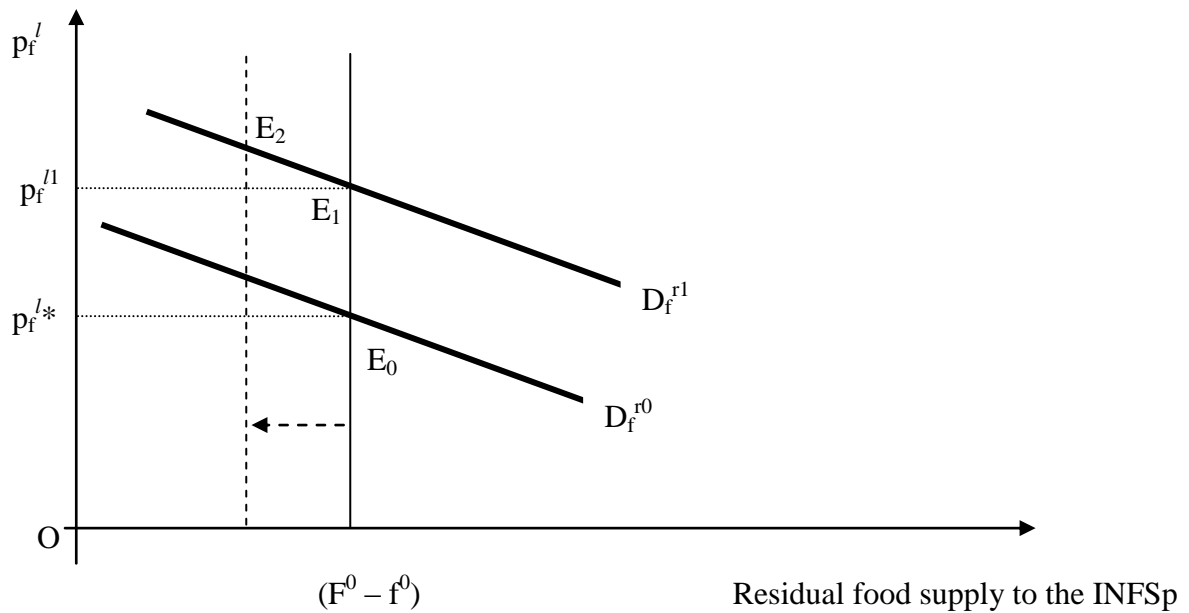

Diagram 3: Food-market equilibrium for the INFSp

4. Some Tentative Medium- and Long-Run Implications

Extending this short-run framework and the comparative static exercises we can discuss analytically some medium/long-run issues as well. A major question that could be discussed using the present framework is the widely debated problem of accumulation by dispossession (ABD: Harvey, 2003; also Sanyal, 2007; Angelo et al, 2017; Bhaduri, 2018) and more importantly, its probable effects on the INFS. The analysis of the latter issue (i.e. the effect of ABD on the INFS) using a structuralist frame is a novel one and it could also throw some light on the growing volume and heterogeneity within the (Indian) INFS. A continuous process of FS expansion requires conversion of enormous amount of resources (water-forest-land). Thus, resources need to be transferred away from traditional uses (like agriculture, forestry, petty nonfarm activity etc.) for sophisticated industrial production and modern cities. This resource-conversion could take place either through market driven processes or by the use of political-economic power and state-force. Whatever be the process of resource-transfer (force-driven expropriation or market-driven conversion), the outcome is obviously a resource-drag from the traditional activities. Consequently, the indigenous population engaged in traditional farming and age-old nonfarm activities are forced to diversify and/or migrate towards the newly spreading INFS activities in and around the cities and also in the villages (e.g. sizeable expansion of petty trade). Among these distressed migrants only the fortunate few can manage a refuge in the modern INFS (INFSm), but a larger section has to throng the petty INFS (INFSp). These tendencies and their repercussions on the INFS could be shown by using Diagrams 1 and 3: When the FS expands and absorbs resources, in terms of Diagram 1, D_u^0 moves to D_u^1 as the expanding FS increases the demand for INFSm; S_u^0 shifts to S_u^1 due to a resource-drag as inflicted by the expanding FS; and hence the new equilibrium shifts at E_2, as compared to the

initial position E_0. As a consequence, the INFSm benefits in terms of real income with a rise in its price, given the price of TAGR output or given its (the price of TAGR output) very slow improvement in the long-run due to the presence of the INFSm intermediaries; but, the employability of INFSm is significantly restricted. Only a small section of the distressed migrant population, pushed out of the traditional farm and nonfarm activities, can be engaged in the INFSm and thereby benefit due to its price rise.

However, on the other hand, a very large part of this migrant-mass has to take refuge in the under-remunerative INFSp. More importantly, even if a larger volume of distressed labouring population has to get engaged in the petty INFSp, their distress, in fact, intensifies.

From the food-market equilibrium condition for INFSp, $(F^0 - f^0) = \{a_f^r (pr/ p_f^l).Lr\}$; with $a_{f\,1}^r > 0$, we get the subsequent observations. If Lr has to rise because of a distress-driven migration/diversification away from the age-old farm and nonfarm works, a_f^r has to fall steeply to maintain food-market equilibrium for the INFSp. This is because, $(F^0 - f^0)$ is reducing due to a fall in TAGR-resources (F) owing to resource-conversion feeding the expanding FS. This moves the equilibrium position from E_0 to E_2 (Diagram 3). As p_f^l rises steeply due to an increased demand for TAGR-output, given the expansion of output and employment in the INFSp and also given the contraction of TAGR-supply for the INFSp, (pr/ p_f^l) has to fall substantially.

Thus, we see that, with an expanding FS (engulfing resources), there is a distress-driven migration from the traditional activities towards the INFS, in general (the phenomenon of distress driven expansion of INFS could also be found in: Chandrasekhar, 1993; Sanyal, 2007; Abraham, 2009). However, despite an improvement in the condition of INFSm in terms of real income due to a demand-driven increase in its price, INFSm can absorb only a fraction of the migrant population owing to the resource-squeeze by the FS. The larger part of the migrant-mass

has to take resort to the INFSp. But, the condition of INFSp in terms of real income deteriorates, as resource-availability constricts.

5. Some Empirical Verification:

We can put forward three specific propositions using the above theoretical analysis, especially, the short-run comparative static exercise:

1. When the formality expands, ceteris paribus, the relatively advanced as well as the backward segments of the informal sector expand through the operations of the push and pull factors.

2. These push and pull factors drive out labour away from TAGR towards the INFS.

3. Even if the formal sector progresses, the petty segments of the INFS fail to gain in terms of labour productivity, although the conditions of the relatively advanced INFS-firms improve to a certain extent.

Before going into the formal testing of the propositions, we present an interesting observation in support of our second premise that is: the expansion of the economy based on FS growth pushes the distressed agrarian population to migrate to the INFS (manufacturing as well as services). The following Figures[17] 1 and 2 (and also Tables 3 and 4) are self-explanatory. The figures show, as anticipated in the second proposition, with the growth of the FS the share of the workforce engaged in agriculture is reducing and the slack is picked up by the INFS (Figure 1). Not only that, Figure 2 shows that with the growth of the FS, the shares of workers in rural/urban population are expanding for all the segments of INFS, though the relation is closer between FS

---

[17] By using scatter diagrams, the extreme outliers are omitted from the state level data analysis.

and the INFS establishment segments. Thus, with an economic expansion, perhaps the workers (mostly) are migrating from agriculture to the INFS.
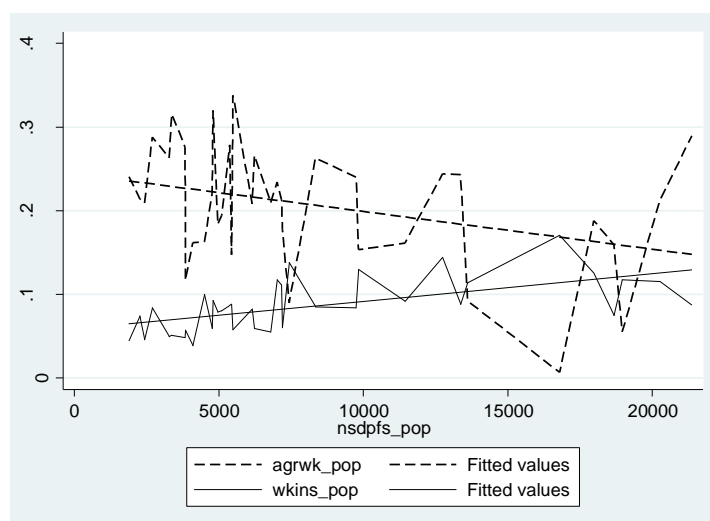

Figure 1: Shares of agriculture and informal sector (without construction) workers in total population over per capita NSDP of formal sector[18] across 20 major states[19] of India pooled over 1999-00 and 2010-11

Table 3: Corresponding correlation among formal sector, agriculture and informal sector

	nsdpfs_pop	agrwk_pop
agrwk_pop	-0.3444***	
wkins_pop	0.5899***	-0.5116***

Note: '***' denotes 1% level of significance.

Source: Figure 1 and table 3 are developed/ derived by the authors using NSSO, CSO (Central Statistics Office) and Census data of Government of India.

Note: In figure 1 and table 3, agwk_pop and wkins_pop denote the shares of agriculture workers and informal sector workers in total population. The nsdpfs_pop denotes the per capita NSDP of formal sector.

---

[18] NSDP FS does not include NSDP of construction. NSDP of FS is calculated by adding the GVA of organized manufacturing sector and NSDP formal services. We calculated NSDP formal services by subtracting GVA of informal services from NSDP services the data for which is collected from NSSO reports and Reserve Bank of India (RBI) website.

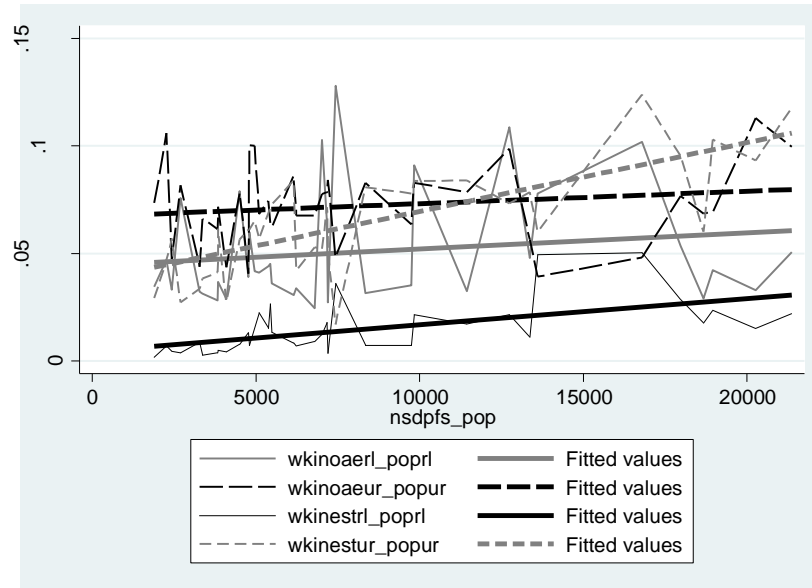[19] Delhi with other 19 selected states mentioned before.

Figure 2: Shares of different segments of informal sector workers (without construction) in rural/urban population over per capita NSDP of formal sector across 20 major states of India pooled over 1999-00 and 2010-11

Table 4: Corresponding correlation between formal sector and different segments of informal sector

	wkinoaerl_poprl	wkinoaeur_popur	wkinestrl_poprl	wkinestur_popur
nsdpfs_pop	0.1604	0.1734	0.5775***	0.7361***

Note: '***' denotes 1% level of significance.

Source: Figure 2 and table 4 are developed/ derived by the authors using NSSO, CSO and Census data of Government of India.

Note: In figure 2 and table 4, wkinoaerl_poprl, wkinoaeur_popur, wkinestrl_poprl and wkinestur_popur denote the shares of workers of self-employed rural informal sector in rural population, self-employed urban informal sector in urban population, workers of rural informal establishment in rural population and urban informal establishment in urban population, respectively. The nsdpfs_pop denotes the per capita NSDP of formal sector.

5.1. Influence on sectoral size of INFS: A state level analysis

To test the proposition 1, we introduce some regression models based on the state level data of unorganized manufacturing sector (UNMS) (proxy for INFS[20]) of 5 NSSO rounds - 40th round for the year 1984-85, 45th round for 1989-90, 51st round for 1994-95, 56th round for 2000-01, and 62nd round for 2005-06. Due to lack of time-series data on UNMS we limited our focus on the periods comprising the above mentioned five NSSO rounds for our analysis. The data on formal or organized manufacturing sector (OMS) (proxy for FS as a whole, as organized manufacturing has high correlation with organized service as well) is collected from Annual Survey of Industries (ASI from Central Statistics Office), the data on agricultural sector from indiastat.com and Ministry of Agriculture websites; and the population data are interpolated from Population census. We have selected 20 Indian states for our analysis (Delhi with other 19 selected states mentioned before). These 20 states covered 95% of UNMS employment and GVA in 2005-06 (NSSO report, 2005-06).

In our theory, as we propose to have two different segments of INFS, viz. modern/advanced and petty/backward, we consider the data of disaggregated UNMS across labour size-class of rural-urban locations, following NSSO report (as also done in our preliminary empirics)- i) small-size UNMS or self-employment or own account manufacturing enterprise or OAME (using no hired labour on a fairly regular basis), ii) medium-size UNMS or non-directory manufacturing establishment or NDME (using 1-5 workers with at least one hired worker on a fairly regular

---

[20] Most of the Indian literature uses the terms 'informal sector' and 'unorganised sector' synonymously while use UNMS data as a proxy for INFS. This is because following the Indian definitions there is very little difference between these two terms 'Informal Sector' and Unorganised Sector'. Unorganised Sector includes all unincorporated proprietary and partnership enterprises (i.e. informal sector enterprises) and enterprises run by cooperative societies, trusts, private and public limited companies (Non- ASI). So, in this paper we have used the terms - informal sector and unorganized sector, interchangeably. Besides, there are 5 rounds of NSSO data for UNMS while only 2 rounds of NSSO data for INFS.

basis) and iii) large UNMS or directory manufacturing establishment or DME[21] (using 6-20 workers with at least one hired worker on a fairly regular basis). This empirical analysis assumes the relatively large and dynamic UNMS segments i.e. the UNMS segments comprise of mainly rural-urban NDME and DME[22], as the advanced or modern UNMS; and the small UNMS segments, i.e. OAME (and particularly, rural OAME) as the less dynamic or petty segments (Ranis and Stewart 1993; Raj and Sen, 2016; Chakrabarti, 2016).

For this state level analysis, multiple regressions are run with Robust Standard Errors (SE) using LSDV (least square dummy variable) method and corrected for multicollinearity by using Variance Inflation Factor (VIF) method[23]. We have also checked that most of the slope dummies are insignificant, which allow us to use LSDV (Gujarati, 2004, pp 642).

With these data and methods we address the first theoretical proposition which says that, if the FS expands, given the total agricultural output (determined by land availability, seeds, labour usage, other inputs like water, fertilizer, etc), the agrarian land-distribution and cropping-pattern and given the total population (along with other factors like technology, tastes etc), real income in (especially petty) agriculture, measured in terms of FS output reduces (via deteriorated agriculture-FS relative-price); and this income deflation triggers off out migration from agriculture to the different INFS segments expanding their sectoral size, depending on the relative strengths of pull by the FS and push from agriculture.

---

[21] The first two rounds NSSO data on UNMS excludes large UNMS enterprise or DME and published data only on OAME and NDME. The UNMS data of different sources are not comparable; so the available DME data from the other sources (like Planning Commission, Government of India) for the pre-liberalization period are not considered in this analysis.

[22] NDME and DME together are called UNMS establishment.

[23] In general, the value of VIF of individual variable never exceeds 6 and the average VIF never exceeds 3.

Hence, the dependent variables of our regression models are levels of employment in different segments of the INFS (here, UNMS); and the principal regressor, as per our theoretical proposition 1, is employment (total persons engaged) in the OMS which is supposed to influence the sectoral size of INFS positively. The other regressors are - (a) share of area of marginal holding in total farming area (b) agricultural land and (c) population of the states. The share of area of marginal holding in total farming area is used as the proxy for agrarian land-distribution and also for the extent of traditional crop farming, which is supposed to influence positively the sectoral size of the INFS (as elaborated below). Agricultural land is used as the proxy for agricultural output. It is an important factor having potential for negatively influencing the sectoral size of INFS; given the relative price of agriculture vis-a-vis FS, as agricultural output falls, farmers are pushed to diversify towards INFS. Lastly, population of the states is the proxy for state size and also an important positive factor determining the size of INFS workforce.

It is argued that farm-size is positively related to adoption of different (modern) agricultural innovations and technologies (Feder et al, 1985; Gabre-Madhin and Haggblade, 2001; Acukudugu et al., 2012). Hence, the marginal and small farmers are less likely to engage in modern agriculture and more likely to confine to traditional-crop agriculture. In our analysis, therefore, we use share of marginal land holdings in total land holdings as the proxy for the basic crop producing traditional agriculture, along with an indicator of general land-distribution. Now, there are close relations between INFS and traditional-crop oriented small and marginal farming due to the presence of strong forward and backward linkages between the two (Chakrabarti and Kundu, 2009). Further, threats to livelihood during the agricultural crisis are higher for the marginal farmers (Mishra, 2008) and hence, the probability of work-diversification towards the informal sector as distressed farmers (Chandrashekhar, 1993) is higher for them.

Next, land being the most crucial and basic input of agricultural production, we use total agricultural land as a proxy for total agricultural production. In our regressions, we have not directly controlled the variable - agricultural NSDP (which is also the net agricultural income). This is because, our theoretical model proposes that an expansion of FS leads to a reduction in farmers' income. And, the growth of FS leads to an expansion of the INFS as these distressed farmers migrate and move towards INFS.

Table 5 gives the mean and standard deviation values of the variables we deal with.

Table 5: Mean and standard deviation (SD) of the variables used for the state level analysis

Variables	No. of Observations	Mean	SD
Workers in rural OAME	98	900794.6	991660.8
Workers in rural NDME	99	108751.5	114393.2
Workers in rural DME	60	139253.8	162409.4
Workers in urban OAME	100	268157.3	274319.4
Workers in urban NDME	100	158368.1	146114
Workers in urban DME	60	176849.6	211418.4
Employment/ Persons engaged in OMS	100	420635.8	369466.2
Share of area of marginal land holdings in total land holdings (in %)	99	22.82231	15.08667
Total agricultural land (in '000 hectors)	100	8014.8	7421.62
State Population (in lakh)	100	456.03	389.0231

Source: Calculated based on different rounds of NSSO reports, ASI reports, indiastat.com website and population census.

Note: The details of the variables are presented after excluding extreme outliers.

Tables 6a and 6b representing our regression results are mostly in line with our expectations. We have introduced two sets of regressions separately for six different segments of UNMS (small/OAME, medium/NDME and large/DME firms of rural and urban areas). In the first

regression model of each UNMS segments (regressions 1, 3, 5, 7, 9, and 11), we consider aforementioned agricultural variables and population as the regressors with the year dummies; and in the second set of equations (regressions 2, 4, 6, 8, 10, and 12), we include FS variable with other regressors of the first set. It can be easily seen from the R-squared values of the regressions that, except in case of rural small UNMS, in all the other UNMS segments the inclusion of FS variable increases considerably the explanatory power of the models.

The regression results further suggest that sectoral volumes of all the segments of UNMS (except urban OAME / small firms) have negative relations with agricultural land; although the results are not always significant. Also, the sectoral size of all the rural UNMS segments and urban small UNMS show close positive association with the extent of traditional farming.

From the second set of regressions of Tables 6a and 6b it is found that the state-level sectoral size of UNMS across its various sub-segments is positively influenced by the expansion of the FS in the state economy (though not significant for rural self-employed/small-firm-based UNMS) controlling for the extent of traditional farming, the agricultural output (capturing resources available for agriculture) and state size. Hence, our regressions support our first proposition that the expansion of formal sector leads to expansion of all the segments of informal sector.

Considering these regression tables (Tables 6a and 6b), Figures 1 and 2 and the observations of Tables 1 and 2 (of section 1), we can say that, FS growth leads to expansions of modern as well as petty segments of INFS through push and pull factors. Tables 6a and 6b and Figures 1 and 2 too show that, an expansion of formal sector spreads informality within the economy. Further, the movement of agricultural labourers towards under-remunerative INFSp, particularly, rural small INFS (as seen from Tables 1 and 2, Figure 2 and regression 2) can be interpreted as a

movement of distressed farmers due to mainly push factors; while the movement of migrant farmers towards relatively high productive informal segments is the effect of initial push factor from agriculture, but finally dominated by pull from the FS. These results, thus, support the first and second propositions of our theoretical model.

Table 6a: Regressions on sectoral size of rural OAME, NDME and DME

Regression No.	1	2	3	4	5	6
Regressand	Rural OAME workers	Rural OAME workers	Rural NDME workers	Rural NDME workers	Rural DME workers	Rural DME workers
Regressors						
Population	.0232289*** (.0030934)	.0228788*** (.0034008)	.0021786*** (.0004669)	.0014466*** (.0004426)	.002803*** (.000914)	.0019304* (.0010383)
Persons engaged in OMS		.0612969 (.2310847)		.129849*** (.0294301)		.1851793*** (.0537974)
Share of marginal land holding in total holdings	10392.3** (4403.385)	10675.52** (4912.414)	2529.791*** (602.9263)	3133.348*** (564.6501)	579.4685 (654.9239)	1383.499** (597.0511)
Agricultural Land	-29.56964** (12.60026)	-29.77805** (12.49694)	-1.782893 (1.945847)	-2.231178 (1.740121)	-.7673123 (4.181372)	-1.734076 (3.211803)
Year dummy 1989-90	45372.49 (209626.3)	45692.34 (210154.5)	-28091.61 (24806.5)	-28219.32 (21227.71)		
Year dummy 1994-95	-173426.7 (184698.2)	-175559.8 (187316.7)	-62698.19* (24859.71)	-68050.78*** (23435.02)		
Year dummy 2000-01	-286711.8 (175271.9)	-283068.5 (174259.8)	-77359.49*** (27327.42)	-70547.51*** (23657.88)	2337.291 (31463.65)	18584.31 (28785.64)
Year dummy 2005-06	-457893.8*** (165814.4)	-456316*** (165111.5)	-68010.39** (29545.12)	-65619.59** (25791.33)	-3956.229 (36374.68)	5287.146 (32618.31)
Constant	29238.55 (146391.4)	13841.05 (165163)	12718.32 (23450.05)	-19518.42 (19349.42)	-8904.275 (30801.34)	-66112.18** (30490.48)
Value of R-square	0.6195	0.6198	0.6096	0.7082	0.5118	0.6266
No. of observations	98	98	99	99	60	60

Note: *, **, and *** imply 10%, 5% and 1% level of significance respectively. Robust standard errors are in the parenthesis.

Table 6b: Regressions on sectoral size of urban OAME, NDME and DME

Regression No.	7	8	9	10	11	12
Regressand	Urban OAME workers	Urban OAME workers	Urban NDME workers	Urban NDME workers	Urban DME workers	Urban DME workers
Regressors						
Population	.0054376*** (.0008051)	.0035299*** (.0008463)	.0034704*** (.0005033)	.0019706*** (.0004742)	.0030572*** (.0008818)	.0010057* (.0005827)
Persons engaged in OMS		.3383976*** (.0761732)		.2660343*** (.0326888)		.4353813*** (.0673165)
Share of marginal land holding in total holdings	351.4046 (762.5614)	1924.325** (928.8576)	-1884.741*** (627.3434)	-648.1755 (654.6505)	-3966.524*** (1463.761)	-2076.14 (1374.05)
Agricultural land	2.015494 (3.389211)	.8472273 (3.160778)	-5.465389** (2.619731)	-6.383832*** (2.128896)	-4.914681 (6.567595)	-7.187674* (4.246381)
Year dummy 1989-90	-53409.59 (64904.07)	-53742.4 (56742.42)	-17649.34 (32846.38)	-17910.98 (21876.97)		
Year dummy 1994-95	-80212.23 (60128.68)	-94161.53* (54636.04)	-11398.58 (30889.05)	-22364.95 (23102.03)		
Year dummy 2000-01	-62908.37 (63919.75)	-45155.76 (51856.67)	-4069.807 (38462.04)	9886.569 (27621.32)	3225.784 (54954.33)	41424.71 (38185.11)
Year dummy 2005-06	-98550.63 (63144.2)	-92319.98** (52339.59)	-28509.98 (32438.98)	-23611.7 (22362.46)	13082.92 (60689.75)	34815.33 (45382.26)
Constant	55188.39 (51273.12)	-28823.29 (41680.3)	97877.72*** (29002.95)	31831.2 (23180.07)	156370** (69610.88)	21866.57 (66555.89)
Value of R-square	0.6464	0.7626	0.5124	0.7640	0.2720	0.6463
No. of observations	99	99	99	99	60	60

Note: *, **, and *** imply 10%, 5% and 1% level of significance respectively. Robust standard errors are in the parenthesis.

5.2. Influence on labour productivity of INFS: A firm level analysis

From the above analysis it is observed that with the growth of the formal sector, all the segments of INFS (here, small-medium-large unorganized manufacturing firms) expand in terms of sectoral size. Now, our next concern is to see whether the progress of the FS is able to improve

36

the condition of the INFS firms for all its segments, or it rather produces a result similar to the proposition 3 as derived from our theoretical analysis. For this study, we develop some OLS regression models (regression 1-6 of Table 8) with robust standard error based on the latest available firm-level data[24] of NSSO (2005-06) on UNMS. However, we use the state-level data for the corresponding variables on other sectoral and aggregate economic activities. In this analysis we concentrate on the same 20 major states[25] of India (mentioned before). This study helps to understand the variation in the condition of firms across different segments of UNMS (condition of firms being expressed in terms of partial labour productivity or GVA per worker) with changes in the FS activities (captured here in terms of FS labour productivity), when agricultural and aggregate economic activities are controlled. Thus, the dependent variables for these regressions are the labour productivity of firms of different segments of UNMS.

As mentioned before, the main regressor for these models is labour productivity or GVA per worker of FS (here, OMS). The controlling variables are the state population (proxy for the size of the states), per capita NSDP (proxy for overall economic condition of the state), share of agricultural NSDP in aggregate NSDP (proxy for agricultural supply), number of workers engaged in each of the UNMS firms and finally, the capital-labour ratio of UNMS firms, as these may have some influence on the dependent variable as well as on UNMS-OMS relationship.

---

[24] For this regression analysis we exclude outliers from the firm level UNMS data by using the following method: outliers < (1st Quartile – 1.5*IQR) and outlier> (3rd Quartile + 1.5*IQR); where IQR implies inter-quartile range.

[25] Here, Bihar does not include Jharkhand, Madhya Pradesh does not include Chhattisgarh and Uttar Pradesh does not include Uttarakhand. These smaller states were created during 2000. As this firm-level dataset was prepared just after that, we exclude them. However, we have checked that, even if we incorporate these three (newly emerged) small states into our analysis, the results are almost similar.

From the general perception, we can say that larger is the population size of the state, higher is the workforce in INFS and lower is the productivity level. On the other hand, economic condition of a state may have a positive impact on the productivity of INFS. Similarly, a higher share of agricultural NSDP in NSDP implies that supply of food and agro-raw materials to INFS is relatively abundant which can enhance INFS productivity. A higher share of agricultural NSDP in NSDP also implies a relatively higher income of the farmers and hence, a demand-pull for the INFS products which can induce INFS productivity. Number of workers (or average firm size) and capital-labour ratio are the internal factors of an INFS firm that have a positive impact on its productivity level. Higher the firm size and higher the intensity of the INFS firm higher would be the productivity level.

Before going into the regression results, here it is necessary to mention that we have checked the normality assumption for the model residuals with the help of boxplot and histograms. The assumption of linearity between the regressands and regressors has also been tested with the help of lowess curves. We found that the model residuals are more or less symmetric, and hence, there is no clear violation of normality. And, almost all the independent variables of our models show a linear relationship with the dependent variables.

Table 7a and 7b show the mean and variance of the variables we used in this firm level analysis.

Table 7a: Mean and standard deviation (SD) values of the firm level variables used for the analysis

Variables	Obs	Mean	SD
GVA per worker in rural OAME	26302	6721.689	5158.908
GVA per worker in rural NDME	5845	15135.45	8746.913
GVA per worker in rural DME	3217	21821.7	13713.12
GVA per worker in urban OAME	20498	7999.979	6519.132
GVA per worker in urban NDME	9939	16146.66	8134.48
GVA per worker in urban DME	4295	30529.86	23087.03
FA per worker in rural OAME	26302	7852.356	7639.03
FA per worker in rural NDME	5845	22336.23	20260.26
FA per worker in rural DME	3217	32154.86	32230.42
FA per worker in urban OAME	20498	16086.66	16008.85
FA per worker in urban NDME	9939	33902.88	27579.91
FA per worker in urban DME	4295	55519.97	49469.93
Workers in rural OAME	26302	1.558779	0.7059801
Workers in rural NDME	5845	3.03148	1.080773
Workers in rural DME	3217	9.707181	3.984663
Workers in urban OAME	20498	1.56103	0.7554635
Workers in urban NDME	9939	3.210081	1.09249
Workers in urban DME	4295	9.100116	3.391369

Source: Calculated based on 2005-06 firm level data of NSSO.

Note: The details of the variables are presented after excluding the outliers.

Table 7b: Mean and standard deviation (SD) of the state level variables used for the firm level analysis

Variables	Obs	Mean	SD
Average labour productivity in OMS or GVA per persons engaged in OMS	20	226833.2	158907.2
Share of agricultural NSDP in total NSDP	20	0.2359265	0.0931268
NSDP per capita	20	14074.46	7520.14
State Population (in lakh)	20	532.5554	448.0203

Source: Calculated based on ASI reports, RBI website and population census.

Now, regressions of Table 8 show that an improvement in labour productivity of OMS adversely affects the labour productivity of rural OAME and NDME (i.e. rural small and medium firms), though the labour productivity levels of other four segments of UNMS are positively affected by it. In other words, improvement in FS productivity may induce the productivity levels of the urban UNMS enterprises and also the rural large establishments but not of the rural petty enterprises; on the contrary, it may even adversely affect labour productivity levels of the rural OAME and NDME enterprises. Thus, FS activity itself creates duality within the INFS by positively influencing the labour-productivity of those INFS firms which are already in an advantageous position (in terms of location and size), and negatively affecting the petty segments. The vast majority of the rural INFS firms do not get any benefit out of this FS activity.

Another interesting point is that when all the other UNMS segments show that larger firm size has a positive impact on labour productivity, the rural self-employed UNMS shows that there is a negative relationship between the number of workers engaged in a firm and its productivity level (could be found also in Mukherjee, 2004). Stated otherwise, increase in the number of workers in the rural self-employed enterprises implies congestion of workers into such firms, lowering their productivity level.

Therefore, regressions of Tables 6a, 6b and 8 (with the observations of Tables 1 and 2 and of Figures 1 and 2) verify our theoretical model. They together show an intriguing phenomenon: an expansion of FS not only engenders a spread of the INFS, but also creates a deep divide within it. Instead of an inclusive growth the FS rather produces a fractured/distorted economic structure; it ensures the persistence of a fissured informality, an 'outside', most of which procreates at a precarious level and only the fortunate few are able to reap the benefits of growth.

Table 8: Regressions on labour productivity / GVA per worker (GVApw) of rural and urban OAME, NDME and DME

Regression No.	1	2	3	4	5	6
Regressand	GVApw Rural OAME	GVApw Rural NDME	GVApw Rural DME	GVApw Urban OAME	GVApw Urban NDME	GVApw Urban DME
Regressors						
FApw	.2124541*** (.0045729)	.1194759*** (.0058628)	.1302986*** (.0079387)	.162403 (.0030473)	.0863833*** (.0031415)	.1629765*** (.0078716)
Worker	-593.4561*** (43.52955)	686.2023*** (106.9084)	40.29682 (53.13552)	40.78683 (55.11914)	451.078*** (73.59759)	1540.653*** (105.1383)
GVApw of OMS	-.0023752*** (.0002825)	-.0029309*** (.0011033)	.0169557*** (.0025167)	.002856*** (.0004626)	.0042551*** (.0008392)	.0085816*** (.0029233)
NSDP agri / NSDP	10406.71*** (783.09)	1673.272 (2370.533)	20.0605 (5657.336)	5956.209*** (1046.49)	3989.622** (1574.105)	13316.2** (6012.609)
NSDP/ population	.0064436 (.0043166)	.0024708 (.0162275)	-.093757*** (.0333713)	-.0170653*** (.0060184)	.0381691*** (.0107877)	.1337891*** (.0388648)
Population	-.0000113*** (7.53e-07)	-.0000305*** (2.50e-06)	-.0000307*** (6.76e-06)	-8.20e-06*** (9.96e-07)	-.0000146*** (1.71e-06)	-.0000113 (7.51e-06)
Constant	4341.601*** (266.1562)	12014.35*** (877.6925)	17102.23*** (1819.219)	4065.266 (367.6081)	10098.48*** (607.0188)	116.1931 (2311.636)
Value of R square	0.1316	0.1168	0.1448	0.1750	0.1332	0.2079
No. of observations	23626	5262	3001	18695	9136	4127

Note: *, **, and *** imply 10%, 5% and 1% level of significance respectively. Robust standard errors are in the parenthesis. FApw and worker denote the FA per worker and worker of the respective UNMS segment.

6. In Lieu of Conclusion: Some Policy Issues

We find from our theoretical and empirical study that informality expands in tandem with growth of the formal sector. The economic progress fails to arrest the expansion of the pool of disadvantaged; contrarily, the growth of FS may be inducing INFS – 'evolution' producing 'involution' or at least a dualism! There are deep fissures within the informality in terms of condition of labour in general; the vast self-employment segment suffers, while the larger firms

prosper. Further, this gap is widening over time with the expansion of formality. The growth of the economy based on capital, thus, produces a '*neo-dualism*' within the economy.

Our theoretical model and comparative static analysis suggest that, as the formality grows the petty farmers are adversely affected because of an input-price rise and/or due to a direct drain of resources; the distressed farmers are pushed out of agriculture. However, only the fortunate few can get a refuge in the advanced segments of the informality (being pulled by the formality itself); but a very large part of this migrant population is pushed to throng the under-remunerative petty informal activities. Thus, the informality expands along with the deepening of its intra-sectoral inequality (could be found also in Himanshu et al, 2016).

The idea of inclusive growth driven by the formality with some institutional makeovers is, thus, questioned. The very growth of formality not only creates exclusion and persistence of informality; but also deepens the misery of the vast section of self-employed. Given this conflict, the formal-informal symbiosis and construction of a 'hybrid economy' with a peaceful co-existence and progress of both the formal and informal (Chen, 2012, pp. 20) seems to be quite difficult. Only a section of the informality could develop being pulled by the FS (as the FS needs it to maintain/increase profit); but, a larger part becomes economically redundant and persists only as an object of governance.

Thus, on the one hand, with an expansion of the FS, the modern/advanced segment of INFS can progress, if the FS-INFS linkages are induced simultaneously; but, it demands some extensive institutional changes.

On the other hand, if the larger portion of INFS that remains outside the extended circuit of FS has to survive/thrive, it has to negotiate with the power of formality; it cannot avoid the dynamics of the FS. The challenge of the informal can be relevant, only if it can act as a cohesive

collective; and in this context, especially, in the contemporary (mainstream) economic world, organized mostly on the principles of private ownership, 'cluster' form of development of the informality could offer a respite/challenge.

Thus, the neo-dualism calls for a dual policy response. While advanced informal activities could benefit if their linkages with formal sector are strategically induced, petty informal segment has to be organised in a planned way and an effective institution could be a cluster.

Further, if a comprehensive agricultural revolution (instead of ever-green revolution associated mainly with modern/large farmers) can be encouraged by forming clusters among small and marginal farmers and by introducing cost-effective new techniques and innovations to the traditional farming complemented with proper training, it could increase the yield in the traditional agricultural sector. It not only improves the condition of so called 'traditional farmers' but also induce improvement of the vast informal workers by increasing the supply of basic economic/agricultural resources.

The prospects of clustering of the petty firms (and also petty farmers) and the organization of socio-economic as also political power around that, and, most importantly, the abilities of the cluster of informal firms vis-a-vis the formality, thus, could be a very important area of research. In this context, Konzelmann and Wilkinson (2016) as well as the general literature on Industrial-Cluster (Banerjee and Munshi, 2004; UNIDO, 2010; Cucculelli and Storai, 2018) could provide some essential insights; and could be the basis for an important extension of the present paper.

References

1. Abharam V. 2009. *Employment Growth in Rural India: Distress Driven?* Economic and Political Weekly, Special Article, Vol. 44, No. 16, pp 97-104

2. Akudugu M.A., Guo E. and Dadzie S. K. 2012. *Adoption of Modern Agricultural Production Technologies by Farm Households in Ghana: What Factors Influence their Decisions?* Journal of Biology, Agriculture and Healthcare Vol. 2, No.3.

3. Angelo J. D., D'Odorico' P., Rulli M.C., Marchand P. 2017. *The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush.* World Development, Vol. 92, pp 1-12. https://doi.org/10.1016/j.worlddev.2016.11.005

4. Annual Survey of Industries (ASI), Government of India reports 1984-85 to 2010-11.

5. Bagchi A.K. 1988. *Problems of effective demand and contradictions of planning in India*, in A.K. Bagchi (ed.) Economy, Society and Polity, New Delhi, Oxford University Press.

6. Bangasser P.E. 2000. *The ILO and the Informal Sector: An Institutional History.* ILO Employment Paper 2000/9, ILO. Available online at www.ilo.org (Informal Economy Resource Database) as on accessed 1.8.2016.

7. Banerjee A. and Munshi K. 2004. *How Efficiently is Capital Allocated? Evidence from the Knitted Garment Industry in Tripur.* Review of Economic Studies, Vol. 71, pp. 19–42

8. Bardhan P. 2009. *Notes on the Political Economy of India's Tortuous Transition*. Economic and Political Weekly, Vol. 44, No. 49, pp. 31-49.

9. Beladi H., Dutta M., Kar S. 2016. *FDI and Business Internationalization of the Unorgnised Sector: Evidence from Indian Manufacturing*. World Development, Vol. 83, pp. 340-49, Elesvier.

10. Bhaduri A. 1986. *Macroeconomics: the Dynamics of Commodity Production*, Delhi, Macmillan.

11. Bhaduri A. 2018. *A Study in Development by Dispossession*. Cambridge Journal of Economics, Vol. 42, No. 1, pp. 19-31.

12. Bhattacharya R., Bhattacharya S. and Sanyal K.K. 2013. *Dualism in the Informal Economy: Exploring the Indian Informal Manufacturing Sector*, in Sarmila Banerjee and Anjan Chakrabarti (eds.) Development and Sustainability- India in a Global Perspective, Springer, pp. 339-362.

13. Breman J. 2013. *At Work in the Informal Economy of India*. Oxford University Press, New Delhi.

14. Bose A. 1989. *Short Period Equilibrium in a Less Developed Economy*, in Rakshit M. (ed.) Studies in the Macroeconomics of Developing Countries. New Delhi: Oxford University Press, pp. 26-41.

15. Chakrabarti A., Chaudhury A. and Cullenberg S. 2009. *Global order and the new economic policy in India: the (post)colonial formation of the small scale sector*, Cambridge Journal of Economics, Vol. 33, 1169-1186

16. Chakrabarti S. 2013. *Interrogating Inclusive Growth: Formal Informal Duality, Complementarity, Conflict*. Cambridge Journal of Economics**,** doi: 10.1093/cje/bet016, Oxford University Press.

17. Chakrabarti S. 2016. *Inclusive Growth and Social Change: Formal- Informal- Agrarian Relations in India*. Oxford University Press, India.

18. Chakrabarti S. and Kundu A. 2009. *Rural Non-Farm Economy: A Note on the Impact of Crop-Diversification and Land-Conversion in India.* Economic and Political Weekly, Special Article, Vol. 44, No. 12, pp. 69-75.

19. Chandrashekher C.P. 1993. *Agrarian Change and Occupational Diversification: Non-Agricultural employment and Rural Development in West Bengal.* The Journal of Peasant Studies, Vol. 20, No. 2, pp. 205-270.

20. Chatterjee P. 2008. *Democracy and Economic Transformation in India*. Economic and Political Weekly, April 19, pp. 53–62.

21. Chen M.A. 2007. *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment*. DESA Working Paper No. 46, ST/ESA/2007/DWP/46.

22. Chen M.A. 2012. *The Informal Economy: Definitions, Theories and Policies*. WIEGO Working Paper No 1.

23. Cucculelli M. and Storai D. 2018. *Industrial Districts, District Effect and Firm Size: the Italian Evidence.* Cambridge Journal of Economics, doi:10.1093/cje/bey021, Oxford University Press.

24. De Soto H. 2000. *The Mystery of Capital*. New York, Basic Books.

25. Dutt, A. K. 2001. *Demand and Wage-Goods Constraints in Agriculture-Industry Interaction in Less-Developed Countries: A Theoretical Analysis*, in A. Bose, D. Ray and A. Sarkar (eds) Contemporary Macroeconomics, New Delhi, Oxford University Press.

26. Feder G., Just E. R. and Zilberman D. 1985. *Adoption of Agricultural Innovations in Developing Countries: A survey*. Economic Development and Cultural Change, Vol. 33, pp. 255-298.

27. Foster A.D. and Rosenzweig M.R. 2004. *Agricultural Productivity Growth, Rural Economic Diversity, and Economic Reforms: India, 1970–2000.* Economic Development and Cultural Change, Vol. 52, No. 3.

28. Gabre-Madhin E.Z. and Haggblade S. 2001. *Success in African Agriculture: Results of an expert survey.* International Food Policy Research Institute, Washington DC.

29. Gujarati D. N. 2004. *Basic Econometrics*, (4th Ed.). The McGraw-Hill Companies, Newyork.

30. Haggblade S., Hazell P.B.R. and Dorosh P.A. 2007. *Sectoral Growth Linkages between Agriculture and the Rural Nonfarm Economy*, in S. Haggblade, P. Hazell and T. Reardon (eds.) Transforming the Rural Nonfarm Economy- Opportunities and Threats in the *Developing World*, Baltimore: Johns Hopkins University Press.

31. Harriss-White B. and Gooptu N. 2001. *Mapping India's World of Unorganized Labour*. Socialist Register 37, pp 89-118.

32. Harvey D. 2003. *The New Imperialism*. Oxford University Press, Oxford.

33. Himanshu, Joshi B. and Lanjouw P. 2016. *Non-farm Diversification, Inequality and Mobility in Palanpur*. Economic and Political Weekly, Vol. 51, Nos. 26 & 27, pp 43–51.

34. International Labour Organisation (ILO). 1972. *Employment, Incomes and Equity: A Strategy for Increasing Productive Employment in Kenya, Geneva*. International Labour Organization.

35. International Labour Organisation (ILO). 2014. *Transitioning from the Informal to the Formal Economy*, Report V (1) of International Labour Conference, 103rd Session, 2014, International Labour Office Geneva.

36. Kanbur R. 2013. *Mindsets, Trends and the Informal Economy.* http://www.kanbur.dyson.cornell.edu/papers/MindsetsTrendsAndTheInformalEconomy.pdf (downloaded on 24.10.14).

37. Kalecki M. 1971 (1934). *On Foreign Trade and 'Domestic Exports'*, in M. Kalecki (ed.) Selected Essays on the Dynamics of the Capitalist Economy, Cambridge, Cambridge University Press.

38. Kalecki M. 1993 (1954). *The Problem of Financing Economic Development*, in J. Osiatynski (ed.) Collected Works of Michal Kalecki, Vol. 5, Oxford: Clarendon Press.

39. Konzelmann S. and Wilkinson F. 2016. *Co-operation in Production, the Organization of Industry & Productive Systems: A Critical Survey of the 'District' Form of Industrial Organisation & Development.* Working Papers wp 481, Centre for Business Research, University of Cambridge.

40. Lanjouw J. O. and Lanjouw P. 2001. *The Rural Non-Farm Sector: Issues and Evidence from Developing Countries*. Agricultural Economics, Vol. 26, No. 1, pp. 1-23.

41. Lewis W.A. 1958 [1954]. *Economic Development with Unlimited Supplies of Labor,* In Agarwala AN and Singh SP (eds.) The Economics of Underdevelopment. New Delhi, Oxford University Press, pp. 400-49.

42. Maloney W.F. 2004. *Informality Revisited.* World Development, Vol. 32, No. 7, 1159-1178

43. Marjit S. 2003. *Economic Reform and Informal Wage –A General Equilibrium Analysis*. Journal of Development Economics, Vol. 72, pp. 371-78.

44. Marjit S. and Kar S. 2011. *The Outsiders- Economic Reform and Informal Labour in a Developing Economy.* India: Oxford University Press.

45. Meagher K. 2013. *Unlocking the Informal Economy: A literature Review on Linkages between Formal and Informal Economies in Developing Countries*, WIEGO (Women of Informal Employment Globalizing and Organizing) Working Paper No. 7.

46. Mellor J.W. 1976. *The New Economics of Growth – A Strategy for India and Developing World*. New York, Cornell University Press.

47. Mishra S. 2008. *Risks, Farmers' Suicids and Agrarian Crisis in India: Is There a Way Out?* Indian Journal of Agricultural Economics, Vol. 63, No. 1, pp. 38-54.

48. Moser C. N. 1978. *Informal Sector or Petty Commodity Production: Dualism or Independent in Urban Development*. World Development, Vol.6, pp. 1041-64.

49. Mukherjee D. 2004. *Problems and Prospects of Informal Manufacturing Sector: A Case Study of Durgapur City*, Indian Journal of Regional Science, Vol. 36, No. 2

50. National Sample Survey Organization (NSSO), Government of India. Different Reports: 1984-85 to 2010-2011. (55th and 67th rounds reports on Informal Sector; 40th, 45th, 51st, 56th and 62nd rounds reports on Unorganised Manufacturing Sector)

51. Nun J. 2000. *The end of work and the marginal mass thesis*, Latin American Perspective. Vol. 27, No. 1, pp. 6-32.

52. Porta R.L. and Shleifer A. 2014. *Informality and Development*. Journal of Economic Perspectives, Vol. 28, No. 3, pp. 109-126.

53. Raj S N R. and Sen K. 2016. *Out of the Shadows: The informal sector in Post reform India*. Oxford University Press, India

54. Ranis G. and Stewart F. 1993. *Rural Non-Agricultural Activities in Development: Theory and Application.* Journal of Development Economics, Vol. 40, No. 1, pp. 75-101

55. Ranis G. and Stewart F. 1994. *V-goods and the Role of the Urban Informal Sector*. Development Centre Discussion Paper No. 724. Economic Growth Centre. New Haven CT: Yale University.

56. Sanyal K. 2007. *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post Colonial Capitalism*. Routledge, New Delhi.

57. Taylor L. 1983. *Structuralist Macroeconomics*. New York, Basic Books.

58. United Nations Industrial Development Organigation (UNIDO). 2010. *Cluster development for pro-poor growth: the UNIDO approach*, United Nations Industrial Development Organization, Vienna.