



Opinion paper

Reforming fossil fuel prices in India: Dilemma of a developing economy



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HIGHLIGHTS

- Fossil fuels' contribution in primary energy supply has risen from 55 to 75 per cent.
- Energy intensity halved for aggregate GDP, but doubled for agricultural GDP.
- Impact of fossil fuel price increase on farming costs mimics a widening spiral.
- Total cost of farming may increase 6.7 times the increase in direct fuel input cost.

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ABSTRACT

Over the period between 1990–1 and 2012–3, fossil fuel use on farms has risen and its indirect use in farming, particularly for non-energy purposes, is also growing. Consequently, both *energy intensity* and *fossil fuel intensity* are rising for Indian agriculture. But, these are declining for the aggregate Indian economy. Thus, revision of fossil fuel prices acquires greater significance for Indian agriculture than for rest of the economy. There are significant differences across crops. The crop-level analysis is supplemented by an alternative approach that utilizes a three-sector input–output (I–O) model for the Indian economy representing *farming*, *fossil fuels*, and *rest of economy*. Fossil fuels sector is assessed to portray, in general, strong forward linkages. The increase in *total* cost of farming, for a given change in fossil fuel prices, is estimated as a multiple of increase in *direct* input cost of fossil fuels in farming. From the three-sector aggregated economy this multiple was estimated at 3.99 for 1998–9. But it grew to 6.7 in 2007–8. The findings have stronger ramifications than commonly recognized, for inflation and cost of implementing the policy on food security.

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1. Introduction

Revision of fossil fuel prices in India continues to be a political *hot potato*. This paper is motivated by the often repeated conjecture that, increase in fossil fuel prices have a strong influence on

prices in general and food prices in particular. Further, the indirect or later-round impact is significantly large relative to the direct or first-round impact.¹ RBI (2011a, pp 641) reports that,

“Empirical estimates show that every 10 per cent increase in global crude prices, if fully passed-through to domestic prices, could have a direct impact of 1 percentage point increase in overall WPI inflation and the total impact could be about 2 percentage points over time as input cost increases translate to higher output prices across sectors”.

We focus sharply on interaction between fossil fuels and farming in India, to capture *total intensity* of fossils in farming and

Abbreviations: AC, All Commodities; ATF, Aviation Turbine Fuel; CACP, Commission for Agricultural Costs and Prices; CSO, Central Statistics Office; FA, Food Articles; FAI, Fertiliser Association of India; FO, Furnace Oil; F&P, Fuel and Power; GDP, Gross Domestic Product; GoI, Government of India; HSD, High Speed Diesel; HYV, High Yielding Variety; IEA, International Energy Agency; INR, Indian Rupee; I–O, Input–Output; IP&NG, Indian Petroleum and Natural Gas; kgoe, kilograms of oil equivalent; ktoe, kilo tonnes of oil equivalent; LNG, Liquefied Natural Gas; LPG, Liquefied Petroleum Gas; LSHS, Low Sulfur Heavy Stock; MP, Manufactured Products; MSP, Minimum Support Price; NF, Non-Food Articles; NG, Natural Gas; NIPFP, National Institute of Public Finance and Policy; PA, Primary Articles; RBI, Reserve Bank of India; RFO, Residual Fuel Oil; SKO, Superior Kerosene Oil; VFC, Virginia Flue Cured; WPI, Wholesale Price Index

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¹ As per a newspaper report in August 2012, then governor of Reserve Bank of India (RBI) D. Subbarao conjectured that, elimination of fuel subsidy could cause a 2.6 per cent spike in inflation (http://articles.economicstimes.indiatimes.com/2012-08-07/news/33083665_1_food-inflation-fuel-subsidy-governor-d-subbarao).

offer some evidence on inflationary impact due to fossil fuel price increase in India.

Anand (2012) in a report on pricing diesel in India, among other things discussed the input cost of diesel/petroleum products for broad economic activities. However, it made only a passing reference to Indian agriculture with a couple of crop-specific examples. Importantly, Anand (*op. cit.*) concerned itself with direct use of only diesel in farming, but indirect use of fossil-fuels for farming appears to be significant.

Two important indirect linkages of fossil-fuels and farming are through use of (a) fertilizers and (b) power or electricity (see Table 51 in Government of India (Gol, 2012a, pp 48). Natural gas (NG) and naphtha, apart from furnace oil and other heavy distillates, are commonly used as feedstock (raw material) in production of fertilizers. Coal, diesel, and liquefied NG (LNG) are used as fuel for electricity (thermal-power) generation for supply to (b1) consumers, including farmers to power their irrigation pump-sets and other farm-equipment and (b2) industry, as input to produce those pump-sets, farm-equipment, fertilizers, pesticides, and other inputs or raw-materials used on farms.

In the next section, we first discuss some issues to contextualize this research. This is followed by a description of the approach to organize relevant data and the analytical framework to derive certain macro-aggregate conclusions that may facilitate debate on fossil fuel price policy reforms.

2. Issues, methods, and sources

Food price inflation in India, over the last few years, has remained at an elevated level (RBI, 2014). The dominant reason accorded to this persistent increase in prices, especially of fruits and vegetables, is a demand pull factor due to growth in incomes (Bandara, 2013). Others have argued that income increase has also raised the demand for fine-cereals and protein-rich food (Ganguly and Gulati, 2013; RBI, 2011b, 2011c).²

On supply side, increase in farming costs could be an outcome of certain domestic policies. The declared intent of certain policies on, say, (a) wage and employment, (b) procurement and buffer-stock, and (c) subsidy, to name a few, could appear virtuous in isolation. However, these may not be incontrovertible as the interactions in their implementation may generate incentives that could dampen the expected outcome, and at worst could accentuate macroeconomic imbalances.

For example, an upward revision in minimum wages and implementation of employment guarantee program, that may help raise income of rural workers and / or reduce distress migration, may also cause an increase in input cost of farm labor (Gulati et al., 2014; Channaveer et al., 2011). Next, the minimum support price (MSP) policy periodically ratchets-up prices garnered by farmers / producers. Essentially geared to account for input costs incurred by farmers, the MSP policy could be a conduit for cost-push inflation (Nair and Epen, 2012; Gulati et al., *op. cit.*)

Subsidy policies also impact in several profound ways. Some subsidies could lower net revenue realization on account of tax expenditures or, constitute foregone revenue implied in the investment incentives. Further, farming costs are often influenced by controls on price of (a) fossil fuels that are used directly on farms and (b) important farm inputs like water, power and fertilizers. The last two in turn use fossil fuel inputs. These controls, on the face of it, should enable keeping a lid on farm-output prices. But such input price subsidy may compromise on effort towards fuel-

conservation and even distort technological choices (Aw-Hassan et al., 2014; Roy et al., 2009).

The design of subsidy policy may be such that it lowers incentives to ramp-up output and/or to minimize cost of production. Thus, policies to directly control prices, practiced over a prolonged period, may have yielded in a perverse outcome of insufficient and inefficient (high cost) power and fertilizer industries (Dorward, 2009). Ironically, while government appears to be pre-occupied with “managing growth of subsidy”, industry appears focused on “garnering subsidy”.

In the context of a developing economy like India, a limited scope to circumscribe public expenditures and / or compulsions to raise public investment could then result in revenue and fiscal deficits. Despite legislation to contain deficits, both at the federal and provincial levels, inadequate credible action to contain subsidies could also be a trigger for inflation. Certain subsidies are in the nature of ‘tax expenditures’ and often designed as concessions. In a different setting, Swift (2006) discusses that “[T]ax expenditure programs are comparable to entitlement programs”, and “[a]ffect (1) the budget balance, (2) budget prioritization in allocation, (3) the effectiveness and efficiency of fiscal resources, and (4) the scope for abuse by taxpayers, government officials and legislators”.

Analytical research suggests that reduction in fossil fuel subsidies should improve prospects for price stabilization and growth (Bhattacharya and Bhattacharyya, 2001; Bhattacharya and Batra, 2009; Bhanumurthy et al., 2012). Recommendations contained in several committee reports drawn over years (see, Gol, 2006, 2010, 2013a), have also concluded that it is desirable to decontrol fossil fuel prices. These studies tend to emphasize favorable long-run outcomes, although acknowledging that in the short-run this could cause inflation and dampen growth.

Between the practitioners in political and economic domains, often there are perceptible differences on (i) duration of short- / long-run, (ii) adversity of inflation, and importantly (iii) adequacy of macro-aggregate growth indicators as basis for policy implementation. With respect to the last, inadequate evidence on distributional outcomes from macro-aggregate analysis of sector specific programs fosters inertia in policy. Despite weakening/stagnating contribution to economic output, farming constitutes a strong political constituency in India. Faced with this reality, the government appears inclined to continue subsidizing farm inputs, while compensating producers of these inputs, namely, fuel, power, and fertilizers (Dansie et al., 2010).

There ostensibly has been a shift away from what was popularly termed ‘administered price mechanism’.³ Thus, pricing of motor spirit (MS / petrol / gasoline), high speed diesel (HSD / gasoil),⁴ aviation turbine fuel (ATF) and all industrial fuels follow a ‘market mechanism’.⁵ However, the *de jure* position on pricing of fuels is quite at variance from the *de facto* situation. And, the retail price of certain farm inputs are administered (controlled, fixed, or influenced) as government policy.

The (relevant) ‘desired’ producer prices for fossil fuels are often benchmarked to some notion of international prices. An increase in international prices of raw materials (say, petroleum crude) may then immediately impact domestic producer prices. In addition,

³ Full ‘decontrol’ however, appears a myth when the tax component in price is large and in case of some fossil fuels constitutes almost half the prevalent retail price.

⁴ Pricing of diesel was deregulated in October 2014.

⁵ Currently, however, ‘price control’ is exercised only on two ‘sensitive’ products namely, kerosene (superior kerosene oil (SKO) rationed to households below the poverty line through the public distribution system (PDS)), and liquefied petroleum gas (LPG, to a prescribed limit and for household use only). In 2012–3, the two together constituted less than 15 per cent (by weight) of all consumption of petroleum products. The figure for 2013–4 is estimated to be of similar order.

² Both, fine-cereals and protein-rich food are normal goods at current average income and consumption level.

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