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BROAD-BASING OF THE GST: THE STRATEGY FOR TRANSITION

SOCIAL POLICY AND DEVELOPMENT CENTRE

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One of the major on-going reforms in the taxation system of Pakistan is the development of the value added tax. It is expected that eventually the major share of tax revenues will accrue from taxes on domestic incomes and consumption. This will represent a fundamental transformation of the taxation structure away from the taxation of international trade transactions. As part of this strategy, the general sales tax (GST) has gradually been developed into a VAT during the decade of the 90s. Tax invoicing of outputs and inputs on a transaction basis was formally adopted in 1996-97. A standard rate (of 12½ per cent) was introduced in 1997. Some broad-basing has already taken place through withdrawal of exemptions on major items like edible oil and sugar. In the former case this was achieved by a corresponding reduction in the customs duty while in the latter case the excise duty was largely substituted by the GST. The transition was thus achieved in a revenue-neutral manner.

As part of its agreement with the International Monetary Fund on the ESAF/EFF program, the government of Pakistan is committed to fundamental reforms in the GST, which envisage large-scale broad-basing of the tax to services, energy and agricultural inputs. As such, a wide range of services relating to transport, telecommunications, etc., and items like electricity, gas, POL products, fertilizers and pesticides are to be brought in phases into the GST net during 1999-2000. The distinguishing feature of this stage of reform is that the tax is being extended to basic production inputs, whereas the emphasis earlier had been on taxation of consumer goods. Implementation of this reform will more effectively ensure that there is taxation at different stages in the value added chain and thereby bring GST closer to being a true VAT.

The proposed reform also potentially has basic implications on the relative price level of goods and services in the economy. For example, consumer goods which are currently exempt from GST, like food items, could witness an increase in prices because of the introduction of GST on inputs like electricity, gas, fertilizer, etc. This raises the prospect of greater regressivity of the incidence of VAT and a disproportionate increase in the burden of taxes on the poorer segments of society. It is proposed to mitigate this impact by making the transition essentially revenue-neutral in character by withdrawing other taxes like excise duties wherever possible simultaneously with the broad-basing of the GST.

The objective of this paper is to demonstrate that **the strategy for transition which involves broad-basing of GST and a withdrawal simultaneously of other taxes to minimise adverse price impacts will not be revenue-neutral in character but could impose overall a substantial revenue loss.** The basic reason for this is that since the GST is being extended primarily on production inputs a significant portion of the revenue is going to be tax-invoiced away in the subsequent stage of value added. As such, total GST revenues may not rise enough to compensate for the withdrawal of other taxes in the system. In subsequent sections of the paper, we derive this conclusion with the help of a simple framework of analysis.

2. A SIMPLE FRAMEWORK

In setting up such a framework for analysis of the price and revenue effects, we make a number of simplifying assumptions. The price of a product (good or service) is standardised to one in the absence of any taxes in the system. Under the assumptions of fixed input-output coefficients and constant returns to scale, the input per unit of output of the items which are being brought into the GST is specified as s, where $s < 1$. The GST is levied at the rate of t. It is assumed that these inputs are subject to their taxes (excise duty or surcharges) at a similar rate t. These taxes will be withdrawn simultaneously with the introduction of GST.

The analysis is conducted separately for products which are sales taxable, exempt or zero rated. This distinction is important because as will be demonstrated later the price and revenue effects vary depending up on the tax treatment of the product.

3. BROAD-BASING OF GST AND WITHDRAWAL OF OTHER TAXES

We consider first the price and revenue implications of a strategy for transition which introduces GST on a number of inputs while simultaneously withdrawing other taxes of an equal amount.

Taxable Product

On the assumption that other inputs remain exempt from GST, we have that currently the retail price of the product, prior to the transition, is given by

$$p = [(1 - s) + s(1 + t)](1 + t) \qquad [1]$$

which simplifies to

$$p = (1 + st)(1 + t) \qquad [2]$$

and the total tax collection (sales tax plus other taxes) is given by

$$\begin{aligned} T &= p - 1 \\ T &= t(1 + s + st) \end{aligned} \qquad [3]$$

After the conversion of other taxes on inputs into the GST, the incidence of taxes is given by the following:

sales tax on inputs = st

sales tax on output = $t - st$

overall, sales tax = t

and the new price, p', following the transition is given by

$$p' = 1 + t \qquad [4]$$

while the total tax revenue now is

$$T' = t \qquad [5]$$

The change in tax revenue is given by

$$T' - T = t - t\,(1 + s + st)$$

that is

$$T' - T = -ts\,[1 + t] \qquad [6]$$

The expression in (6) represents the revenue loss from the strategy of transition which seeks to broaden GST while withdrawing other taxes of an equal amount.

<u>Exempt Product</u>

In this case the retail price of the product is

$$p = 1 - s + s\,(1 + t)$$

that is,

$$p = 1 + st \qquad [7]$$

Following the reform, the sales tax revenue is given by

sales tax on inputs	=	st
sales tax on output	=	O
overall, sales tax	=	st

and the new price, p', is

$$p' = 1 + st \qquad [8]$$

Similarly, it can be shown that

$$T' = T = st \qquad [9]$$

Therefore, in the case of exempt products, the conversion of other taxes into GST has no implication on the retail price and is revenue neutral in character.

<u>Zero-Rated Product</u>

Currently, we have that excise duties and surcharges on output destined for export are exempted but there is no provision for zero rating of excise duties or surcharges on inputs.

Therefore, currently the export price of a product is

$$p = 1 + st \qquad [10]$$

Following the reform we have

sales tax on inputs	=	st
sales tax on output	=	$0 - st = -st$
overall, sales tax	=	0

That is, the introduction of GST and withdrawal of other taxes will lead to

$$p^{*} = 1, \; T^{*} = 0$$

The results in the case of the three types of products are summarised in Chart I. Revenue losses are likely to accrue in the case of taxable and zero rated products. In the latter case, the loss is equivalent to the component of input tax invoicing of sales tax. The loss is higher in the former case because of the component of cascading of taxes. It is only in the case of exempt products where the particular transition strategy is revenue-neutral in character.

We turn now to an alternative strategy for the transition.

CHART I

TRANSITION STRATEGY: SALES TAX REPLACES EXCISE DUTIES AND OTHER TAXES ON INPUTS

Type of Product	With Excise Duty and Other Taxes and with no Sales Tax (1)	With no Excise Duty or Other Taxes and with Sales Tax (2)	Difference (2) - (1)
TAXABLE PRODUCT			
Retail Price	$(1 + st)(1 + t)$	$1 + t$	$-st(1 + t)$
Total Tax Revenue	$t(1 + s + st)$	t	$-st(1 + t)$
EXEMPT PRODUCT			
Retail Price	$1 + st$	$1 + st$	O
Total Tax Revenue	st	st	O
ZERO RATED PRODUCT			
Retail Price	$1 + st$	1	$-st$
Total Tax Revenue	st	O	$-st$

4. BROAD-BASING OF GST WITH NO WITHDRAWAL OF OTHER TAXES

Since withdrawal of other taxes simultaneously with the imposition of GST implies revenue losses, as highlighted above, we now consider the case where the GST is introduced and the rest of the tax regime is left unchanged. As before, we consider the case of taxable, exempted and zero-rated products separately.

<u>Taxable Product</u>

The incidence of sales tax now is:

sales tax on inputs	=	$s\,(1+t)\,t$
sales tax on output	=	$(1+st)\,t - s\,(1+t)\,t$
overall, sales tax	=	$(1+st)\,t$

and the retail price, p', is

$$p' = (1+st)\,(1+t) \qquad [11]$$

From (2) it can be seen that there is no change in price. Consequently, total tax revenues also remain the same.

<u>Exempt Product</u>

The existing price in this case is given by

$$p = 1+st \qquad [12]$$

Since the sales tax is additional in character, the new price can be derived as

$$p' = s\,(1+t)^2 + 1 - s$$

That is,

$$p' = 1 + 2st + st^2 \qquad [13]$$

The increase in price is

$$p' - p = 1 + 2st + st^2 - 1 - st$$

That is,

$$p' - p = st(1 + t) \qquad [14]$$

This also corresponds to the additional revenue.

<u>Zero-rated Product</u>

Currently, the price is given by (12). The incidence of sales tax, following its extension, is:

sales tax on inputs	=	$s(1 + t)\,t$
sales tax on output	=	$0 - s(1 + t)\,t$
overall, sales tax	=	0

Therefore, in this case also there is no change in the price or in total revenues.

Results in the case of the alternative strategy for reform are presented in Chart II. We have that in this case the transition is revenue-positive in character. While total tax revenues from taxable and zero rated products remain unchanged there is some extra revenue from exempt products.

Therefore, the two transition strategies are at polar extremes in terms of their implication on prices and total tax revenues. In the case where there is a corresponding reduction in other taxes in line with the introduction of the sales tax on inputs, total tax revenues fall while in the case where the broad-basing of the GST takes place without tampering with the rest of the tax system, tax revenues rise. Therefore, for the transition strategy to be overall revenue-neutral in character there is a case only for partial elimination of other taxes at the time of extension of GST. The extent to which other taxes should be reduced depends upon the relative importance of the three types of

CHART II
TRANSITION STRATEGY: SALES TAX IS ADDITIONAL TO EXISTING TAXES ON INPUTS

Type of Product	With Excise Duty and Other Taxes and no Sales Tax (1)	With Excise Duty and Other Taxes and Sales Tax (2)	Difference (2) - (1)
TAXABLE PRODUCT			
Retail Price	$(1 + st)(1 + t)$	$(1 + st)(1 + t)$	O
Total Tax Revenue	$t(1 + s + st)$	$t(1 + s + st)$	O
EXEMPT PRODUCT			
Retail Price	$1 + st$	$1 + 2st + t^2$	$st(1 + t)$
Total Tax Revenue	st	$2st + t^2$	$st(1 + t)$
ZERO RATED PRODUCT			
Retail Price	$1 + st$	$1 + st$	O
Total Tax Revenue	st	st	O

products. If the share of exempt products is high then the magnitude of reduction in other taxes can be relatively large.

5. EMPIRICAL ANALYSIS

Based on the above analysis, we derive as an illustration the revenue implications of extension of GST to the energy sector) POL products, gas and electricity. Table 1 gives the pattern of energy consumption by type of consumer. We discuss below the pattern for each form of energy.

POL products: The largest consuming sector of POL in volume terms (tonnage) is transport. The consumption is primarily of high speed diesel (HSD) oil, motor spirit and aviation fuel. Even though it is proposed to extend the GST to services, it is unlikely that initially the road transport sector, which consumes bulk of HSD oil, will be brought into the tax net. Therefore, this part of POL input will be into an exempt sector. To the extent that fleets of trucks are maintained and operated by taxable entities there will be tax invoicing of the sales tax paid on HSD consumption. However, this is likely to be a small component of consumption.

TABLE 1
PATTERN OF ENERGY CONSUMPTION
1997-98

(%)

Type of Consumer	POL Products	Gas	Electricity
Commercial	)	3.1	5.3
Households	3.0	22.1	42.1
Industry	12.5	19.0	27.8
Cement	)	2.0	)
Fertilizer	)	24.3	)
Agriculture	1.5	)	15.7
Transport	44.3	)	)
Power	36.4	29.5	)
Government	2.3	)	9.1
TOTAL	**100.0**	**100.0**	**100.0**

Source: Pakistan Economic survey, 1998-99, Government of Pakistan.

In the case of motor spirit, the distribution of automobile ownership between households and corporate entities will determine the extent to which there is scope for tax invoicing. Consumption by households represents final consumption and in this sense it is like exempt consumption because there is no scope for tax invoicing. Motor spirit consumption by the corporate sector will be partly by sales taxable entities or by zero-rated export firms which can invoice away the tax paid on this input. If airline tickets which are currently subject to excise duty are brought into the GST net, then the consumption of fuel in the air transport sector will potentially be subject to tax invoicing.

The share of industry in POL consumption is relatively small. Within this sector part of the input will be into taxable or zero rated entities and the rest into exempt entities. After transport, the largest sector consuming POL products (mostly furnace oil) is power generation. If GST is extended to the power sector also then the tax on the POL input will be entirely invoiced away. In summary, we have the following conclusions in the case of POL products (see Table 2).

TABLE 2
INPUTS OF POL PRODUCTS INTO TAXABLE, EXEMPT AND ZERO RATED PRODUCTS

Sector	Share in Consumption (%)	Status of Product from POL input
Households	3.0	Exempt
Industry	12.5	Partly taxable, partly exempt and partly zero-rated
Agriculture	1.5	Partly zero-rated, partly exempt
Transport	44.3	*Road Transport (Trucks and Buses):* Mostly exempt *Road Transport (Cars):* Partly exempt, partly zero rated, partly taxable Railway Transport: Taxable Air Transport: Taxable
Power	36.4	Taxable
Government	2.4	Exempt
TOTAL	**100.0**	

Detailed information is not available on the pattern of consumption by taxable, zero-rated or exempt entities within sectors. Therefore, it is not possible to derive the overall share of POL consumption by exempt sectors. It appears reasonable to conclude (as a ball park estimate) that about 40 per cent of POL consumption is by taxable and zero-rated entities and the remaining 60 per cent by exempt entities which cannot tax invoice their consumption of POL. Therefore, broadly speaking, for revenue-neutrality to be preserved the introduction of a 15 per cent sales tax on POL products can be accompanied by a reduction in customs/excise duty and development surcharge which is about 60 per cent of the magnitude of the sales tax. Even with a revenue-neutral transition there will be need to increase retail prices of POL products.

Gas: The largest gas consuming sector is power (especially if allowance is made for substantially higher tariffs charged from this sector) which will become a taxable sector once GST is levied on electricity. The next largest consumer is the fertilizer industry which again is likely to be brought into the ambit of GST. Household consumption is effectively into an exempt sector. Part of commercial consumption is by taxable entities (like large restaurants and hotels, where the present excise duty may be converted into GST). Here again, industrial consumption is by all three types of entities. Therefore, we have the following conclusions in the case of gas sales (see Table 3).

TABLE 3
INPUTS OF GAS INTO TAXABLE, EXEMPT OR ZERO-RATED PRODUCTS

Sector	Share in Consumption (%)	Status of Product from Gas input
Commercial	3.1	Partly taxable, partly exempt
Households	22.1	Exempt
Industry	19.0	Partly taxable, partly exempt and partly zero-rated
Cement	2.0	Exempt [i]
Fertilizer	24.3	Taxable
Power	29.5	Taxable
TOTAL	**100.0**	

[i] Sales tax exempted in 1997-98

Therefore, it appears that over 50 per cent of gas input is by potentially taxable entities. As such, there is the prospect that a large part of the GST revenue collected on gas will be subsequently tax invoiced. Therefore, the additional revenue is likely to be relatively small. As such the scope for reduction of excise duty and development surcharge simultaneously with the levy of GST is limited to only about one half of the sales tax levied.

Electricity: The largest consumption of electricity is by households. However, tariffs charged from this category of consumers are relatively low. Industrial consumers pay substantially higher tariffs and represent the largest category in terms of billing. Electricity input in this sector will be partly to taxable, partly to zero-rated and partly to exempt entities. Agriculture represents a partly exempt and partly a zero-rated sector. Commercial tariffs are also relatively high and consumption of electricity in this sector is partly by taxable and partly by exempt entities. Conclusions in the case of electricity sales are given below in Table 4.

TABLE 4
INPUTS OF ELECTRICITY INTO TAXABLE, EXEMPT OR ZERO-RATED PRODUCTS

Sector	Share in Consumption (%)	Status of Product from Electricity input
Commercial	5.3	Partly taxable, partly exempt
Households	42.1	Exempt
Industry	27.8	Partly taxable, partly exempt and partly zero-rated
Agriculture	15.7	Partly exempt, partly zero-rated
Government	9.1	Exempt

[i] Sales tax exempted in 1997-98

Therefore, in this case about 30 per cent of consumption is probably by taxable inputs. Here again, there is the prospect that a significant component of the GST revenue collected from electricity will be subsequently tax invoiced away. A one to one reduction in surcharges on electricity tariffs alongwith the introduction of GST on electricity will imply significant overall revenue losses.

6. RECOMMENDED STRATEGY FOR TRANSITION

On the basis of the simple framework developed earlier we have arrived at a number of conclusions. First, if the broad-basing of GST is accompanied by withdrawal simultaneously of other taxes of an equal amount then this could lead to significant revenue losses depending upon the component of tax invoicing which we have shown in the previous section is likely to be high in the case of productive inputs of energy and services. Second, an alternative strategy which leaves other taxes unchanged could lead to price increases in the case of sectors where these inputs are either in the nature of final consumption or the outputs from these inputs are not liable to sales taxation. If price increases are to be avoided, especially in cases where the impact is on poorer households, then it may be necessary to mitigate the impact by corresponding reductions in other taxes.

However, it needs to be emphasised that the CBR has set revenue targets for itself in 1999-2000 which are very ambitious. A reform which actually implies revenue losses cannot be allowed at this time. Therefore, the strategy for broad-basing GST has to be at the least revenue-neutral in the short run and revenue-enhancing, if possible.

Based on these conditions we have developed a strategy of transition in each case which recognises the nature of different types of consumers and proposes retention/withdrawal depending largely on the status of these consumers in terms of their liability to taxation under GST. We also try and minimise the immediate impact on households, especially those belonging to lower income groups.

POL Products

The recommended strategy for POL products is given in Chart III. The strategy varies by product. It is proposed that wherever possible the customs duty on import/excise duty on domestic production be eliminated and the development surcharge reduced so as to keep the retail prices of kerosene oil, light diesel oil, high speed diesel oil and motor spirit unchanged, as these products are mostly consumed by households and exempt sectors. It is only in the case of furnace oil where

CHART III

RECOMMENDED STRATEGY FOR TRANSITION IN THE CASE OF POL PRODUCTS

Type of Consumer	POL Product	CHANGE IN		IMPLICATIONS ON PRICES		IMPLICATIONS ON REVENUE			
		Customs Duty/ Excise Duty	Development Surcharge	Price of POL Product	Price of Final Product	Customs Duty / Excise Duty	Development Surcharge	GST	Overall Revenue
HOUSEHOLDS	Kerosene Oil	) [a]	Reduction	None	Decrease	)	Decrease	Increase	None
INDUSTRY:									
● Taxable & Zero-Rated	Furnace Oil	None	None	Increase	None	None	None	None	None
● Exempt		None	None	Increase	Increase	None	None	Increase	Increase
AGRICULTURE	Light Diesel Oil	Withdrawal	Reduction	None	None	Decrease	Decrease	Increase	None
TRANSPORT	High Speed Diesel Oil	Withdrawal	Reduction	None	None	Decrease	Decrease	Increase	None
	Motor Spirit	Withdrawal	Reduction	None	)	Decrease	Decrease	Increase	Decrease
	Aviation Fuel [i]	None	None	Increase	None	None	None	None	None
POWER [i]	Furnace oil	None	None	Increase	None	None	None	None	None
OVERALL						**Decrease**	**Decrease**	**Increase**	**Ambiguous**

[a] No customs duty on Kerosene oil.

change is proposed as bulk of consumption is by the power sector where the tax paid will be no subject to input tax invoicing following the levy of GST on power. Some additional revenue will accrue from those industries which are currently exempt from GST while there will some loss of revenue due to tax invoicing of input of motor spirit by corporate entities which are liable to GST.

Gas

In the case of gas, the recommended strategy is presented in Chart IV. According to this strategy, it is proposed to withdraw the present excise duty on gas distribution in the case of two types of consumers) households and cement factories. Overall, the transition in this case can be somewhat revenue-enhancing in character.

Electricity

For power, the recommended strategy is highlighted in Chart V. A, more or less, general reduction in the surcharge is proposed in this case to keep the price of electricity unchanged for commercial, domestic, agricultural and government consumers. A mechanism will have to be developed by government to make up the resulting losses of revenue to WAPDA. This should be possible because overall there is likely to be some gain in revenue, especially since entities which currently evade GST will now be compelled to pay some of the tax liability via the tax on inputs.

7. CONCLUSIONS

GST reform involving broad-basing of the tax to energy and agricultural inputs and to services is impending in 1999-2000. **The objective of the paper is to demonstrate that if a strategy for transition is adopted which involves broad-basing of the tax by a withdrawal simultaneously of other taxes (excise duties and surcharges) of an equal amount then the reform will not be revenue-neutral but could impose overall a substantial revenue loss.** On the basis of a simple framework, the paper shows that the magnitude of the revenue loss will depend primarily on the extent to which the GST collected is input tax invoiced in the next stage of value added (if we ignore the component of revenue loss due to the cascading of GST on other non-invoiceable taxes).

CHART IV

RECOMMENDED STRATEGY FOR TRANSITION IN THE CASE OF GAS

Type of Consumer	CHANGE IN		IMPLICATIONS ON PRICES		IMPLICATIONS ON REVENUE			
	Tariff	**Excise Duty on Distribution**	**Price of Gas**	**Price of Final Product**	**Development Surcharge**	**Excise Duty**	**GST**	**Overall Revenue**
COMMERCIAL[a]	None	None	Increase	Increase	None	None	Increase	Increase
HOUSEHOLDS	None	Withdrawal	None	)	None	Decrease	Increase	Increase
INDUSTRY:								
• Taxable & Zero-Rated	None	None	Increase	None	None	None	None	None
• Exempt	None	None	Increase	Increase	None	None	Increase	Increase
CEMENT[b]	None	Withdrawal	Increase	Increase	None	Decrease	Increase	Increase
FERTILIZER[c]	None	None	Increase	None	None	None	None	None
POWER[d]	None	None	)	None	None	None	None	None
OVERALL					**None**	**Decrease**	**Increase**	**Increase**

[a] on the assumption that most commercial establishments are exempt
[b] Excise Duty rate is 10% while GST rate is 15%
[c] On the assumption that fertilizer is also subject to GST. In the interim period, this sector will be zero-rated
[d] On the assumption that power is also subject to GST

CHART V

RECOMMENDED STRATEGY FOR TRANSITION IN THE CASE OF POWER

Type of Consumer	Change in Surcharge	IMPLICATIONS ON PRICES		IMPLICATIONS ON REVENUE		
		Price of Power	Price of Final Product	Development Surcharge	GST	Overall Revenue
COMMERCIAL[a]	Reduction	None	None	Decrease	Increase	None
HOUSEHOLDS	Reduction	None	)	Decrease	Increase	None
INDUSTRY:						
• Taxable & Zero-Rated	None	Increase	None	None	None	None
• Exempt	None	Increase	Increase	None	Increase	Increase
AGRICULTURE	Reduction	None	None	Decrease	Increase	None
GOVERNMENT	Reduction	None	None	Decrease	Increase	None
OVERALL				**Decrease**	**Increase**	**Increase**

[a] on the assumption that most commercial establishments are exempt

By their very nature, energy, fertilizer and services are productive inputs and the share of final consumption by households is relatively small. Therefore, there is the prospect of significant tax invoicing of these inputs, depending upon the extent to which they are used in the production of sales taxable, zero-rated or exempt products. While proper quantification of the component of tax invoicing is not possible without access to detailed information on demand patterns, casual empiricism suggests that this could range from about 30 per cent in the case of electricity, 40 per cent in the case of POL products to 50 per cent in the case of gas.

The paper develops a strategy for transition in each case which recognises the nature of each type of consumer and proposes retention/withdrawal of other taxes depending upon the tax treatment (taxable, exempt or zero-rating) with respect to GST. Also, a special effort is made in the strategy to protect final consumers of energy inputs and mitigate the impact directly on households.

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S U M M A R Y

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