

# THE PROGRESSIVE GOODS AND SERVICES TAX (GST) / VALUE ADDED TAX (VAT) (FISCAL POLICY) AS A TOOL OF INFLATION TARGETING



## *The Theory for Inflation*

By Julio Altamirano (Jnr)

# Is a Higher Inflation Target Plausible?

- By Overcoming Most of the Adverse Costs, Consequences and Effects of Inflation
- But in also acting as a Buffer Against Disinflation and Deflation...?



# Topic for Doctor of Philosophy PhD

- Premised upon taxable income...and thus, the ability to pay principle...
- *In Reply...*



- Key Hypotheses: (a) and (b)
- (a) By premising the regressive Goods and Services Tax (GST) or Value Added Tax (VAT) on the ability to pay principle of taxable income the regressive GST / VAT would become progressive in nature?



- (b) Can a Progressive Goods and Services Tax (Premised Upon Ability to Pay) act as a tool of inflation targeting and allow a higher inflation target, without many of the costs of inflation? And, thus a tool that can combat the Global Financial Crisis...



- Key Hypothesis: for Part I

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- By premising the regressive GST / VAT on Taxable Income, the regressive GST/VAT would become progressive in nature? Can the GST/VAT be made Progressive through the Ability to Pay Doctrine of Taxable Income?

- Tax rates 2016–17

- The following rates for 2016–17 apply from 1 July 2016.

• Taxable income	• Tax on this income	• GST Payable
• 0 – \$18,200	• Nil	• 0%
• \$18,201 – \$37,000	• 19c for each \$1 over \$18,200	• 10%
• \$37,001 – \$87,000	• \$3,572 plus 32.5c for each \$1 over \$37,000	• 20%
• \$87,001 – \$180,000	• \$19,822 plus 37c for each \$1 over \$87,000	• 30%



# Tax Formula

- Tax Formula, Tax Rates and Tax Offsets
- $\text{Income tax} = (\text{taxable income} \times \text{rate}) - \text{tax offsets}$  (CCH, 2015)
- Adapting the income tax formula to the GST we observe:-
- $[\text{Goods and Services Tax refundable or payable} = (\text{taxable income} \times \text{progressive rate of GST}) - \text{tax offsets}]$



- For example (an illustration): Case Study 1
- An individual earning below the tax free threshold:
- 0 – \$18,200 0% GST
- Developing and applying the formula:
- Goods and Services tax liability = (taxable income x progressive rate of GST) – tax offsets
- Taxable Income or Tax Free Threshold \$18,200
- GST rate 10% (i.e. registered entity rate)
- GST paid during financial year:  $\$18,200 \times 10\% = \$1,820$
- How can the individual obtain a GST refund for GST paid during the financial year in such a situation?
- For instance:
- GST refund rate 10%
- GST refunded at financial year end:  $\$18,200 \times 10\% = \$1,820$
- Thus:
- GST Liability = GST paid during financial year less GST refunded at financial year end
- Nil =  $\$1,820 - \$1,820$ .
- Effective rate of GST =  $\frac{\text{Total GST Liability} \times 100\%}{\text{Taxable Income}}$
- $\$0/\$18,200 = 0\%$
- Effective rate of GST = 0%





- **For example (an illustration): Case Study 3**

- An individual earning above the tax free threshold within the following tax threshold amounts:

- \$37,001 – \$87,000      \$3,572 plus 32.5c for each \$1 over \$37,000      20% GST

- Applying the formula:

- Goods and Services tax payable = (taxable income x progressive rate of GST) – tax offsets

- Taxable Income \$85,000

- GST rate 10% on taxable income of \$85,000

- GST paid during financial year: \$85,000 x 10% = \$8,500

- GST liability payable at financial year end @ 20%

- Applying the formula for GST tax payable:-

- Goods and Services tax payable = (taxable income x progressive rate of GST) – tax offsets

- GST Liability = \$85,000 x 20% - tax offsets

- GST Liability = \$17,000

- Thus:

- GST Liability = GST paid during financial year less GST liability outstanding at financial year end

- GST Liability = \$8,500 - \$17000

- GST Liability = \$8,500 at end of financial year outstanding.

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- Effective rate of GST =  $\frac{\text{Total GST Liability}}{\text{Taxable Income}} \times 100\%$

Taxable Income

- \$17,000/\$85,000 = 20%

- **Effective Rate of GST = 20%**





- Further in support of the hypothesis, to prove the above, I will use the purchasing power of the dollar equation or rather, calculate the price index and accordingly extend the price index.
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- The purchasing power in today's money of an amount  $C$  of money,  $t$  years into the future, can be computed with the formula for the present value: (Wikipedia, 2015)
- where in this case  $i$  is an assumed future annual inflation rate.
- Therefore,
- 
- $C_t = \frac{\$40,000}{(1 + .07)}$
- $C_t = \$37,383$
- 
- However by adding a cost of living allowance tax credit (expenditure based) to the formula equal to the inflation rate it is theorised that the adaptation of the purchasing power of the price index formula would keep the purchasing power of the dollar (salaries and wages) intact.

• Thus the new equation would be:-

- $C_t = \frac{\$ C}{(1 + i)} \times (1 + c)$
- 
- $C_t = \frac{\$40,000}{(1 + .07)} \times (1 + .07)$
- 
- $C_t = \$40,000$



- **The Fisher Equation**

- *Borrower's perspective:-*

- n = nominal interest rate
- r = real interest rate
- i = inflation rate
- c = cost of living allowance tax credit or rebate

- $n = r + i - c$
- $n = 3\% + 15\% - 15\%$
- $n = 3\%$

- *Lender's perspective:-*

- n = nominal interest rate
- r = real interest rate
- i = inflation rate
- c = cost of living allowance tax credit or rebate

- $n = r + c$
- $n = 3\% + 15\%$
- $n = 18\%$



- Income is either saved / dissaved or spent...we thus have a new tool of inflation targeting...but can it overcome most of the costs of inflation whilst acting as a buffer against deflation or disinflation through a higher inflation target?
- *Thus, a viable solution to the costs, consequences and effects of inflation but acting as a buffer against deflation?*



# Overcoming Most of the Costs of Inflation

- Reiterating, (McKenna, 1990) inflation can be described as a continual increase in the general price of goods and services. These authors accentuate that of an increase in ‘general’ prices, not specific instances of a price rise. In Australia, for instance, it is the consumer price index that is of concern. It effectively “... means a fall in the value of money.” (Hawthorne, 1981) The consumer effectively can buy a lesser amount of goods or services than previously. (Hawthorne, 1981) The opposite of inflation is deflation which means a fall in the price level and should not be confused with disinflation. (Hawthorne, 1981) When prices are falling, the consumer can purchase more goods and services with the same amount of money, thus, the value of money has risen. (Hawthorne, 1981)



# Arbitrary Redistribution of Real Income

- I must reiterate why inflation is an economic concern. The costs of inflation can be:
  - Arbitrary Redistribution of Real Income
- The problem arises here for those whose “money income rises *more* rapidly than the general price level; the losers are those groups whose money income rises *less* rapidly than the general price level.” (Challen & Hagger, 1981)
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- By extending the purchasing power of income (monies and wages) index for a c.p.i adjusted cost of living allowance tax credit or rebate this problem of inflation can significantly be overcome. There is no arbitrary redistribution of real income, the c.p.i adjusted cost of living allowance tax credit or rebate keeps the purchasing power of all incomes caught by the accounting and tax system intact.



# Arbitrary Redistribution of Real Wealth

- A second point to be made, is that inflation can lead “to a potentially unjust redistribution of real wealth.” (Challen & Hagger, 1981) The essential issue is that “the real value of a given sum of money declines.” (Challen & Hagger, 1981) For instance, if the general level of prices rise by 10 per cent “people whose wealth consists mainly of assets with a fixed, or virtually fixed, money value such as bank deposits, government bonds and private debt of various kinds will be losers, in terms of wealth, under inflationary conditions.” (Challen & Hagger, 1981) “Persons whose assets consist mainly of real property will be gainers because, generally speaking, the money value of real property rises in line with, or even more rapidly than, the general price level.” (Challen & Hagger, 1981) The redistribution of wealth would thus in fact be non-arbitrary and unjust.



# Economic Efficiency

- The movement of prices is the channel by which the market conveys information. For instance, a price increase of one good relative to others is, so to speak, the price signal that directs resources and rations consumption. (Bryan & Pike, 1991) Thus, the market operates through the distribution of prices. (Bryan & Pike, 1991)
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- Thus, inflation can undermine the efficiency of the economic system in numerous ways. When there is inflation, a particular price change may be a relative price change. (Bryan & Pike, 1991) Or it may also be just part of the general rise of prices. (Bryan & Pike, 1991) In the absence of inflation households and firms can assume that all price changes are relative price changes. (Bryan & Pike, 1991) Inflation however can obscure relative price changes thus obscuring the transmission of market information and thus reducing market efficiency. (Bryan & Pike, 1991)



# Economic Efficiency

- Real price in month t = 
$$\frac{P_i}{(CPI_t/100)}$$
- 
- i = commodity
- $P_i$  = nominal price of commodity
- $CPI_t$  = consumer price index for month t
- 
- Thus the real price is disclosed in addition to the nominal price of the commodity. [<http://www.foodsecurityportal.org/adjusting-prices-inflation>] accessed at 1<sup>st</sup> of January 2016.
- The nominal vs real price of an item is what is paid in dollars terms for the good or service. The real price of a good or service on the other hand is the quantity of other goods to be sacrificed to purchase the good or service. For instance, if the monies used to buy a good or service also buys 6 units of other goods or services, the good or service has a real price of 6 units.
- It is generally known that in making sound economic decisions, real prices are preferred over nominal prices as they reflect the opportunity cost of purchasing one good or service over another.



- Thus we can observe how the real prices have increased or decreased over the relevant period. As a result the price tag or menu can provide vital information to consumers on whether relative prices have increased or decreased during the period thus overcoming a major cost of inflation.
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- The notation demand pull or cost push can also be disclosed thus providing vital information to consumers on whether the inflation is attributed to demand excess or of rising costs thus strengthening the price signal/s.



# Costs of Economising on Money Balances

- Another cost of inflation is the cost of economizing on money balances. As the general price level rises, real values of money fall. Thus, changing one's preference for holding money as opposed to in the form of assets is necessary under inflationary conditions. The costs of economizing on money balances would thus include:
  - 
  - Time and effort associated with economizing on money balances
  - Inconvenience associated with illiquidity.
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- With the tool of inflation targeting not only is there no real loss, due to the monetary compensation, but there is no cost associated with the time and effort of economizing on money balances and further no inconvenience associated with illiquidity.



# Institutional Distortion

- The last economic concern in a closed economy is that expressed by Sir John Hicks, “...inflation is undesirable because it distorts the institutions which lie at the heart of modern society.” (Challen & Hagger, 1981) That of, “[t]he accounting system, the tax system, even the general legal system, all are based on the assumption of a stable value of money; if the value of money is seriously changeable, they are twisted out of shape.” (Challen & Hagger, 1981)
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- As discussed inflation is a general increase in the price level. (Kumar, 2016) How inflation affects the traditional accounting system as “...it fails to reflect the price level changes in the financial statements as it is based on historical cost.” (Kumar, 2016) The AICPA has a definition of inflation accounting “...as a system of accounting, which purports to record as a built-in mechanism, all economic events in terms of current cost.” (Kumar, 2016)



- Features of Inflation Accounting
- The inflation accounting has an inbuilt and automatic recording procedure.
- The unit of measurement is not stable like traditional or historical accounting.
- It takes into consideration all the elements of financial statements for reporting.
- The realization principle is not rigidly followed, particularly in the case of recording fixed assets and long-term loans. (Kumar, 2016)
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- There is a need under inflationary conditions in accord with this economic theory to adopt inflation accounting. Why? In the Nigerian example, Statement of Accounting Standard (SAS) 2 states that “...all accounting information that will assist users to assess the financial liquidity, profitability and viability of a company should be disclosed and presented in a logical, clear and understandable manner.” (Amaefule) Thus, financial statements of firms should reflect a “true and fair” view of the operations and affairs in a reportable period, so as that users of the financial reports are not misled when making decisions based on the information in the financial reports. (Amaefule)
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- (Amaefule) defines inflation accounting as “...that accounting system that recognizes the changes in monetary values as it affects the assets and liabilities of firms being reported on historical values.” (Amaefule) And as (Amaefule) states there can be the “...overstatement of profits, excessive payment of taxes and dividends.” (Amaefule)
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- Nigerian firms still account under the historical cost basis, with no recognition of inflation. (Amaefule) This is quite fallacious, speaking from both an accountant or economists perspective. Thus inflation accounting can overcome the institutional distortion resulting from using historical cost accounts.



- **A Unilateral (Floating Exchange Rate) Perspective**
  - *An Australian Perspective*
    - *Implications to the Exchange Rate*
  - *Implications to raising the inflation target?*
- ***When a country's currency appreciates (rises in value relative to other currencies), the country's goods abroad become more expensive and foreign goods in that country become cheaper (holding domestic prices constant in the two countries). Conversely, when a country's currency depreciates, its goods abroad become cheaper and foreign goods in that country become more expensive. (Mishkin)***



- ***The Importance of Exchange Rates***
- The exchange rate is crucial to the economic well being of its citizens due to the fact that they affect the relative prices of domestic and foreign goods. Mishkin (2010)
  - ***An increase in the domestic interest rate...shifts the demand curve for domestic assets,  $D$ , to the right and causes the domestic currency to appreciate ( $E \uparrow$ ). Similarly, [a] decrease in the domestic interest rate...shifts the demand curve for domestic assets,  $D$ , to the left and causes the domestic currency to depreciate ( $E \downarrow$ ). Mishkin (2010)***  
See Figure 1.1.



# Expansionary Monetary Policy

- For instance, if the economy is initially at the equilibrium point F in the diagram below. GDP is at the level  $Y^1$  and the exchange rate is  $E_{\$/\pounds}^1$ . The US central bank, the FED, then decides to expand the money supply causing a shift in the AA – curve. An increase in the money supply will cause an upward shift of the AA curve from AA to A'A' line.
- First the quick result, then the quick result with the transition process described, and finally the complete adjustment story.
- *Quick Result:* The increase in AA causes a shift in the super-equilibrium point from F to H. In adjusting to the new equilibrium at H, GNP rises from  $Y^1$  to  $Y^2$  and the exchange rate increases from  $E_{\$/\pounds}^1$  to  $E_{\$/\pounds}^2$ . The increase in the exchange rate represents an increase in the British pound value and a decrease in the US dollar value. In other words, it is an appreciation of the pound and a depreciation of the dollar. Since the final equilibrium point H is above the initial iso-CAB line CC, the current account balance increases. If the CAB were in surplus at F then the surplus increases, if the CAB were in deficit, then the deficit falls. Thus, *US expansionary monetary policy causes an increase in GNP, a depreciation of the US dollar and an increase in the current account balance in a floating exchange rate system according to the AA-DD model.*



- *Transition Description:*
- Consider the upward shift of the AA curve due to the increase in the money supply. Since exchange rates adjust much more rapidly than GNP, the economy will initially adjust back to the new A'A' curve before any change in GNP occurs. That means the first adjustment will be from point F to point G directly above. The exchange rate will increase from  $E_{\$/\pounds}^1$  to  $E_{\$/\pounds}^1$ , representing a depreciation of the US dollar.
- Now at point G, the economy lies to the left of the DD-curve. Thus, GNP will begin to rise to get back to G&S market equilibrium on the DD-curve. However, as GNP rises the economy moves to the right above the A'A' curve which forces a downward readjustment of the exchange rate to get back to A'A'. In the end, the economy will adjust in a stepwise fashion from point G to point H, with each rightward movement in GNP followed by a quick reduction in the exchange rate to remain on the A'A' curve. This process will continue until the economy reaches the super-equilibrium at point H.



- Notice that in the transition the exchange rate first rises to  $E_{\$/\pounds}^1$ , above the rate it will ultimately reach at  $E_{\$/\pounds}^2$ , before settling back to super-equilibrium value. This is an example of exchange rate overshooting. In the transition, the exchange rate *overshoots* its ultimate long-run value.
- Exchange rate overshooting is used as one explanation for the volatility of exchange rates in floating markets. If many small changes occur frequently in an economy, the economy may always be in transition moving to a super-equilibrium. Because of the more rapid adjustment of exchange rates, it is possible that many episodes of overshooting, both upwards and downwards, can occur in a relatively short period of time.



- *Complete Adjustment Story:*
- Step 1) When the money supply increases, real money supply will exceed real money demand in the economy. Since households and businesses hold more money than they would like, at current interest rates, they begin to convert liquid money assets into less-liquid non-money assets. This raises the supply of long-term deposits and the amount of funds available for banks to loan. More money to lend will lower average US interest rates, which in turn will result in a lower US rate of return in the FOREX market. Since  $ROR_{\$} < ROR_{\pounds}$  now, there will be an immediate increase in the demand for foreign British currency, thus causing an appreciation of the  $\pounds$  and a depreciation of the US  $\$$ . Thus, the exchange rate,  $E_{\$/\pounds}$ , rises. This change is represented by the movement from point F to G on the AA-DD diagram. The AA curve has shifted up to reflect the new set of asset market equilibria corresponding to the higher US money supply. Since the money market and foreign exchange markets adjust very swiftly to the money supply change, the economy will not remain off the new A'A' curve for very long.



- Step 2) Now that the exchange rate has risen to  $E_{\$/\pounds}^1$ , the real exchange has also increased. This implies foreign goods and services are relatively more expensive while US G&S are relatively cheaper. This will raise demand for US exports, curtail demand for US imports, and result in an increase in current account and, thereby, aggregate demand. Because aggregate demand exceeds aggregate supply, inventories will begin to fall stimulating an increase in production and thus, GNP. This is represented by a rightward shift from point G.



- Step 3) As GNP rises, so does real money demand, causing an increase in US interest rates. With higher interest rates, the rate of return on US assets rises above that in the UK and international investors shift funds back to the US resulting in a \$ appreciation (£ depreciation), that is, a decrease in the exchange rate  $E_{\$/\pounds}$ . This moves the economy downward, back to the A'A' curve. The adjustment in the asset market will occur quickly after the change in interest rates. Thus, the rightward shift from point G in the diagram results in quick downwards adjustment to regain equilibrium in the asset market on the A'A' curve, as shown.



- Step 4) Continuing increases in GNP caused by excess aggregate demand, results in continuing increases in US interest rates and rates of return, repeating the stepwise process above until the new equilibrium is reached at point H in the diagram.
- Step 5) The equilibrium at H, lies to the northeast of F along the original DD curve. ...[T]he equilibrium at H lies above the original iso-CAB line. Therefore, the current account balance will rise.



- **Conclusion: Significance of Research**
- The question or key hypothesis of the paper was whether a GST tax return for individuals or families (premised upon ability to pay doctrine) can solve the regressive-progressive GST / VAT debate and whether the progressive GST / VAT can act as a tool of inflation targeting thus a challenge to conventional monetary policy inflation targeting and whether the fiscal policy instrument of inflation targeting can overcome most of the costs of inflation and thus the question or issue, should we raise the inflation target?

