# **Derivation of the fiscal multipliers**

Y = C + I + G (1)

C = α + β(Y-T) (2)

I = IF (3)

G = GF (4)

T = TF (5)

Substitute (5), (4), (3), (2) into (1):

Y = α + β(Y- TF) + IF + GF (6)

Y – βY = α - βTF + IF + GF

Y(1-β) = α - βTF + IF + GF

Y = [1/(1-β)]\*[ α - βTF + IF + GF] (7)

From (7), calculate ΔΥ / ΔG, ΔΥ / ΔT

ΔΥ / ΔG = 1/(1-β) (8) this is the fiscal expenditures multiplier

And

ΔΥ / ΔT = -β/(1-β) (9) this is the taxation multiplier

From the above we can see that for the case of the balanced budget, the joint multiplier is equal to 1.