r. gordon, macro-

~~109~~ 119 oh 5 Strong and Weak Effects of monetary and ~~fi~~ fiscal policy.

study 5-1 Introduction

We shall IS and LM curves to find the strength and weakness of monetary and fiscal ~~m~~ policy, still assuming that P is fixed.

Good summary of properties of IS and LM curves.

~~110~~ 121 5-2 Strong Effects of an Increase in Real Money Supply.

IS fixed, $\bar{A}$ is 500, k is 4.0; $LM_0(M^s/P = 400$; $LM_1(M^s/P = 600)$

Income moves from 1400 to 1600; interest drops from 7.5 to 5%

IS as before; LM_0 vertical at income 1400; LM_1 vertical at 1800.

Income increases by 400 billion; interest drops from 7.5 to 2.5 %

Two cases of strong effect of increase in money supply

LM sloped: income increases by 200 billion; interest drops by 2.5%

LM vertical: income increases by 400 billion; interest drops by 5%

~~114~~ 123 5-3 Weak effects of monetary policy: unresponsive expenditures and the liquidity trap

IS vertical through Q = 1400; $LM_0(M^s/P = 400)$; $LM_1(M^s/P = 600)$

Increasing money suppply by 200 billion reduces interest rate by 5% (7,5 to 2.5) while Q remains unchanged.

But while the Fed is powerless when IS is vertical, the fiscal branch can increase Q by raising $\bar{A}$ by spending G or easing $\bar{T}$

The liquidity trap

Two conditions: (1) businessmen and consumers must be very pessimistic, so that IS curve shifts far to left; and (2) the higher real money supply calls for an interest rate lower than the minimal rate attainable (2.5%).

The liquidity trap supposes that there is a minimal interest rate: that supposes that there is a minimal rate and a consensus that r has fallen so low that the holding of stocks and bonds can lead only to capital losses.

~~119~~ 127 5-4 Case Study: Was there a liquidity trap during the great depression. The answer apparently is, No!

~~122~~ 130 5-5 Weak Monetary Effects: Qualifications of the General Rule.

When equilibrium implies a negative interest rate, ordinary procedures are no remedy.

However the fiscal policy makers can shift IS to the right (raise $\bar{A}$) as far as necessary to bring income to natural rate Q*

with full employment. E. g. in fig 5-3 it can raise $\bar{A}$ back to 500 billion by raising gov't expenditures, cutting autonomous taxes, raising autonomous transfer payments, cutting income tax rate.

Also it is possible for the Fed to directly influence r without help from fiscal policy. It can do so if A_p depends not only on the interest rate but also on the current value of real balances (the real mony supply M^s/P). The increase in the real money supply increases household wealth, encourages consumer spending, encourages further investment.

This addition to the real money supply to the list of determinants of the IS schedule (alond with $\bar{A}$ and k) as usually called the real balance effect or the Pigou effect.

Figure 5-5, p. 123.

$LM_0(M^s/P = 400;\ IS_3(\bar{A} = 250;\ M^s/p = 400)$
$LM_1(\ \ " \ \ = 600):\ IS_4(\ \ "" \ \ \ \ = 600)$
$LM_2(\ \ " \ \ 1600);\ IS_5(\ \ "" \ \ \ \ = 1600)$

The assumption is that an increase of 100 billion in the real money supply causes an increase of 12.5 billion in A_p and with the multiplier at 4.00 of 50 billion in Q. Thus an increase of 200 billion in real money supply shifts the IS right by 100 billion. It takes a massive increase from 400 to 1600 billion to bring the economy back to Q*.

131

5-6 Pure fiscal expansion and the crowding out effevt.

LM fixed at $(M^s/P = 400)$
$IS_0(\bar{A} = 500)$ r = 7.5

Fiscalexpansion of 100 billion with interest remaining at 7.5 % and multiplier remaining at 4.00 would raise Q to 1800 billion but this is a point below the LM curve.

$\Delta G = 100$ If LM curve remains fixed, interest moves up to 10% and Q to 1600
$\Delta Q = 200$ so that the government spending multipler moves down to 2.00.

multiplier 2.0 Higher gov't spending raises real output, but not by as much as is implied in the simple multiplier of chapper 3. The steeper the LM curve, the more powerful the crowding-out effect and the samller the fiscal policy multiplier.

The higher interest rate may be explained by the need of a higher rate for the gov't to sell 100 billion in bonds.

~~127~~ 133 The 100 billion G increase income by 200 billion. The increment gives gov't 100 billion of commodities, increases induced consumption, C, by 150 billion, and reduces autonomous private spending by 50 billion.

133-~~134~~ -135 5-7 Interest rates and the expansion of Vietnam spending.

In 1966-Q4 the real money supply was almost exactly equal to the money supply in 1965-Q3. During this five-quarter period real gov't purchases increased by 12.9%. This increase in Q was effected by fiscal policy without change in money supply. LM remained fixed; IS shifted to the right.

Real income increased by 60.4 million, gov't spending by 27.3, with multiplier accounting for the difference.

The higher transaction demand for money forced ~~x~~ an increase in the interest rate from 4.2 to 4.7% to keep the total demand for money equal to the fixed supply.

65-Q3 to 66Q4: $LM_0(M^S/P = 225)$ and interest keeps increasing
66-Q4 to 67-Q2: $LM_1(M^S/P = 229)$ money supply increases, r constant

65-Q3 IS_0 intersects LM_0 with Q at 932 and G at 211.3
66-Q4 IS_1 intersects LM_0 with Q at 993 and G at 238.6;
67-Q2 shift completed from LM_0 to LM_1
IS_2 intersects LM_1 with Q at 1001 and G at 247.3

~~129~~ 136 5-8 Strong and weak effects of fiscal policy

~~133~~ Fiscal policy is strong when demand for money is highly responsive to interest. The strongest interest responsiveness is when demand for money is infinite, the LM curve is horizontal, the rate of interest is fixed, the multiplier is 4.00 as in chapter 3 which prescinded from interest changes.

The opposite situation occurs when interest responsiveness is zero, the LM curve is vertical.

In the first case a gov't expenditure of 100 billion moves the IS curve to the right and Q increasing 400 billion.

In the second case, the IS curve moves to the right again in exactly the same manner as in the first case; but now Q remains at 1400, the interest rate rises from 7.5 to 12.5%, but the higher rate releases no extra money to support higher income.

"All recent statistical studies are unanimous in concluding that interest responsiveness is not even close to zero."

138

5-9 Fiscal expansion with an accomodating money supply

Fig 5-9

If the monetary authority acts, not to keep the money supply constant, but to keep the interest rate constant, then at a constant interest rate, 7.5%, both IS and LM change so that

$IS_0(\bar{A} = 500)$ moves to $IS_1(\bar{A} = 600)$
$LM_0(M^s/P = 400)$ moves to $LM_1(M^s/P = 600)$
Intersection of IS and LM remains at the same level (r at 7.5)
Multiplier is the simple 4.00
Q increases from 1400 to 1800

140

5-10 The monetary-fiscal policy mix

Fig 5-10

IS_0 IS_1 LM_0 LM_1 are same as in 5-9
But instead of moving across the square along horizontal r = 7.5, one chooses between moving up LM_0 to its intersection with r = 10 or down IS_0 to its intersection with r = 5
In both cases Q = 1600; in the former real money is 400; in the latter it is 600
but one takes route upwards by government purchases of 100 billion

Tight money
Easy fiscal

or by a 133 billion transfer payment such as social security.
In the former case gov't spending is 100 billion but in the latter it is zero; in the former case real autonomous consumption is 75 and in the latter it is 175; in both I_p is 225.

Easy money
Tight fiscal

If one moves down to r = 5, I_p is 300, a is 100.

137

Appendix to chapter 5

The Elementary Algebra of Equilibrium Income

(1) $Q = kA_p$

(2) $A_p = \bar{A} - br$ "b" is interest responsiveness of A_p; eg 20 billion

(3) $Q = k(\bar{A} - br)$ eg $Q = 4.0\bar{A} - 80r$

(4) $M^s/P = M^d/P = eQ - fr$ "e" is responsiveness of real money demand to higher real income; "f" is interest of real money demand
"e" is $\frac{1}{2}$; f is 40

(5) $Q = \frac{M^s/P + fr}{e}$ $\quad Q = \frac{400 - 40r}{0.5}$

(5a) $r = \frac{eQ - M^s/P}{f}$

(7) $Q = \frac{\bar{A} + (b/f)(M^s/P)}{(1/k) + (be/f)}$ from (3) and (5a)

140 Elementary Algebra of Equilibrium Income, con'd

(8) $Q = k_1\bar{A} + k_2 M^s/P$ from (7) where

$$k_1 = \frac{1}{(1/k) + (be/f)}$$

$$k_2 = k_1(b/f)$$

$$Q = k(\bar{A} - bi)$$

$$= k\left(\bar{A} - \frac{be}{f}Q + \frac{b}{f}M^s/P\right)$$

$$= k\bar{A} - \frac{kbe}{f}Q + \frac{kb}{f}\frac{M^s}{P}$$

$$Q\left[1 + \frac{kbe}{f}\right] = k\bar{A} + \frac{kb}{f}M^s/P$$

$$Q\left[\frac{1}{k} + \frac{be}{f}\right] = \bar{A} + \frac{b}{f}M^s/P$$