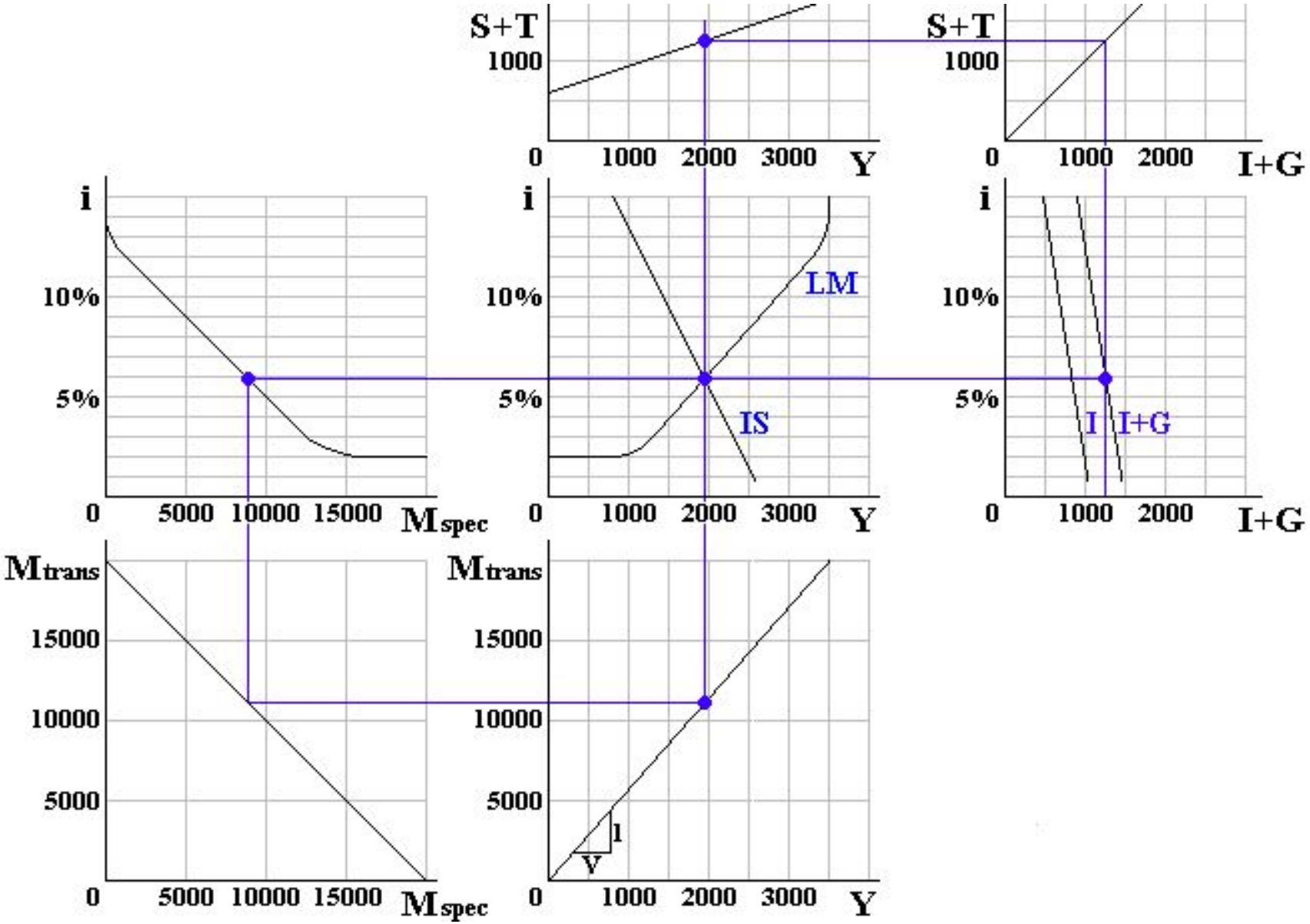
JOHN MAYNARD KEYNES
1883-1946

ISLM ANALYSIS AN EXTENSION OF THE KEYNESIAN FRAMEWORK

ROGER W. GARRISON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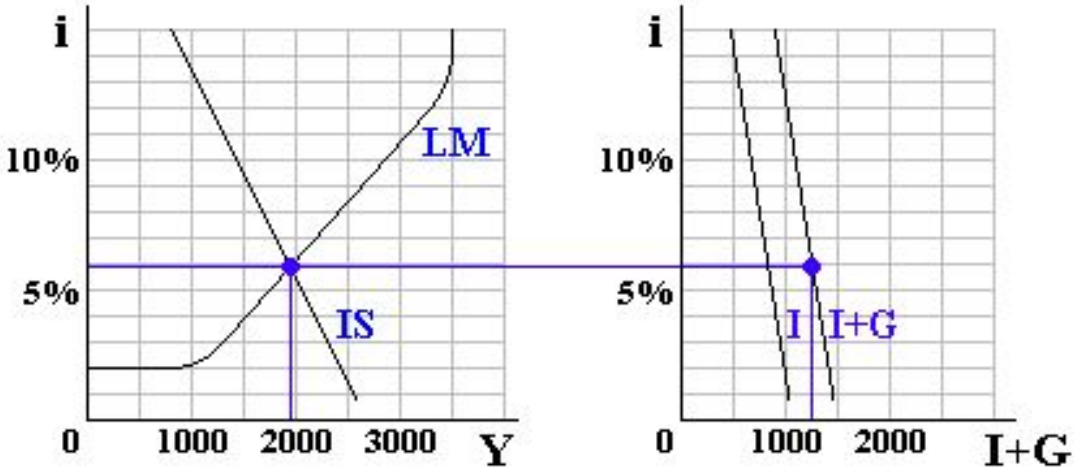
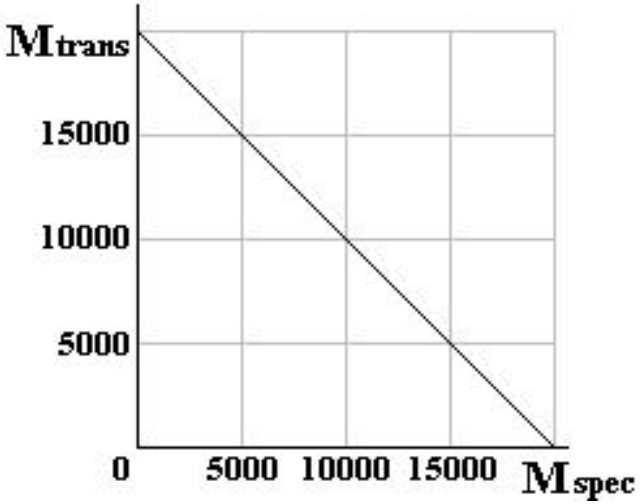
What happens when government spending is increased?





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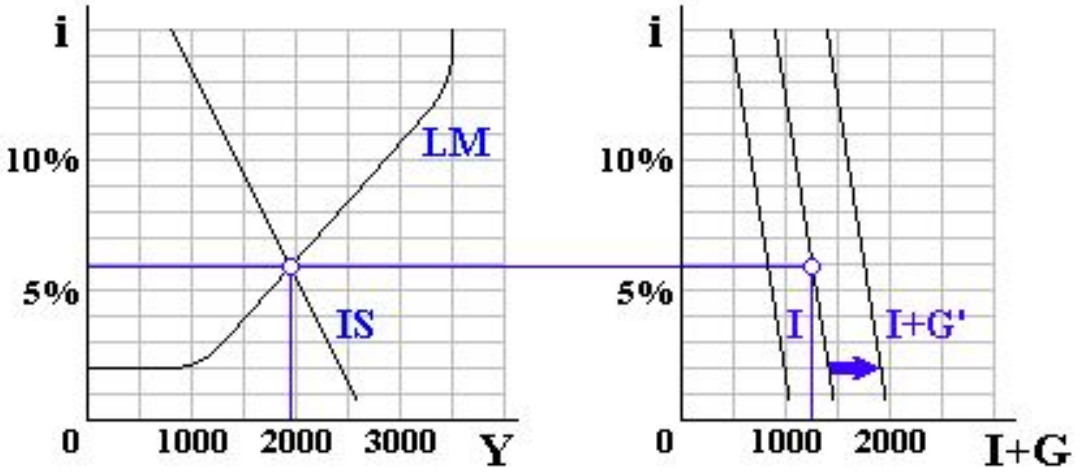
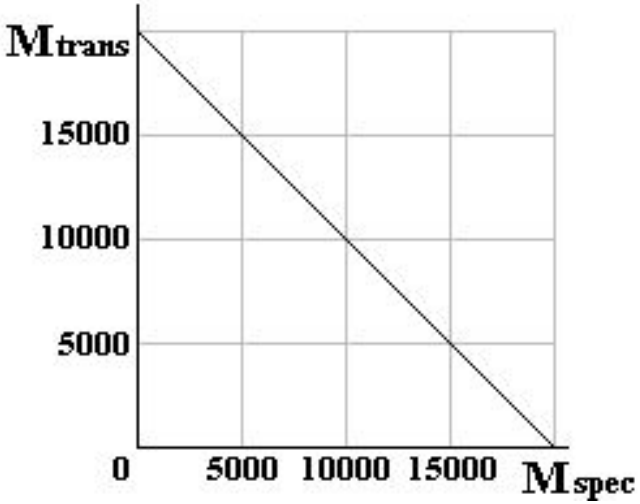
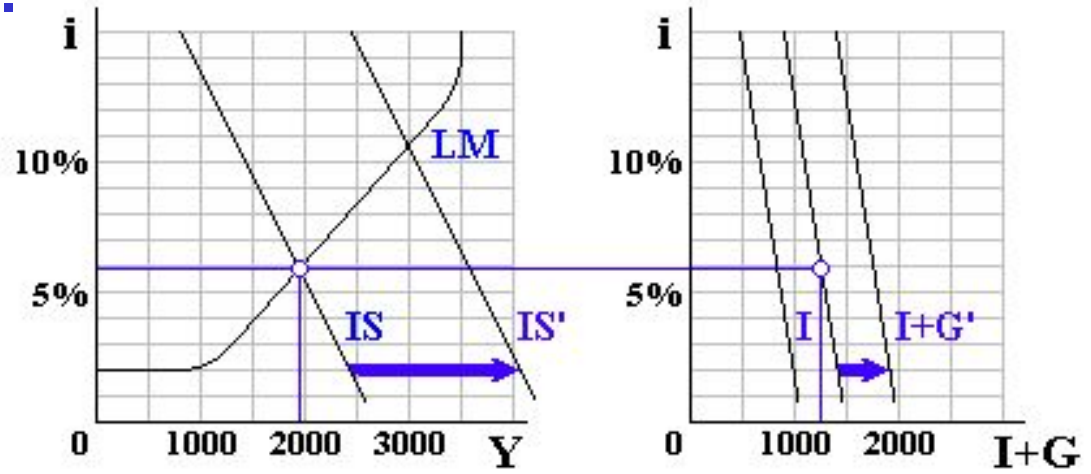
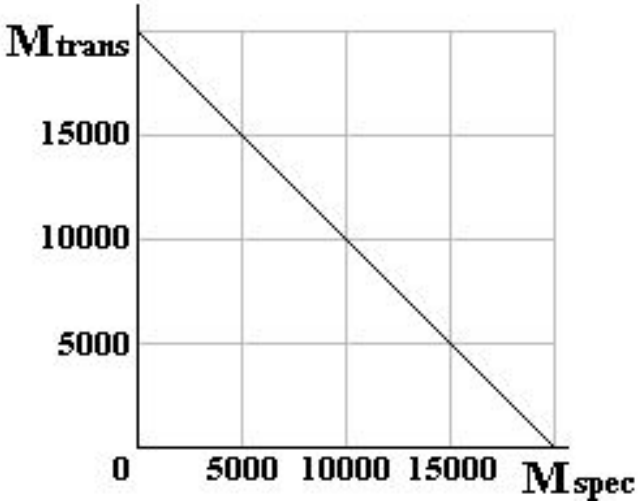




What happens when government spending is increased?

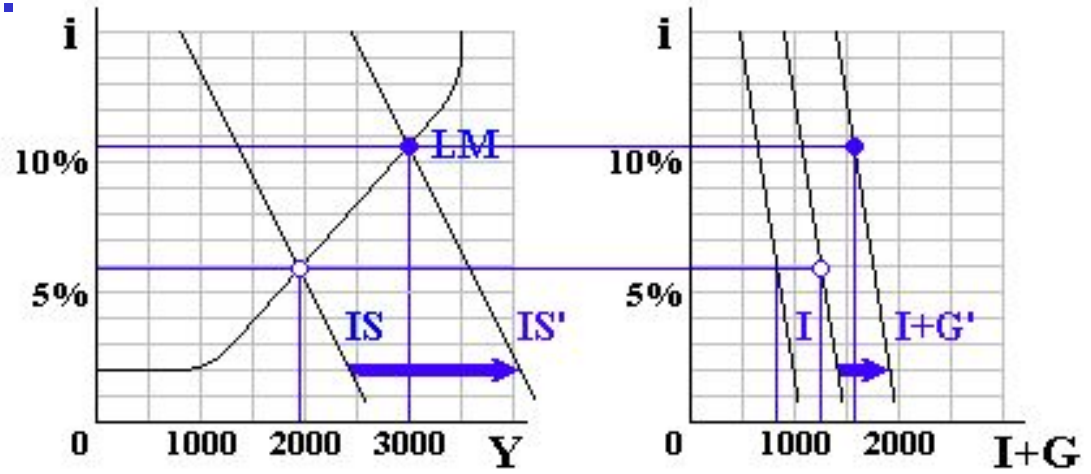
The relative lengths of the blue arrows is governed by the spending multiplier.

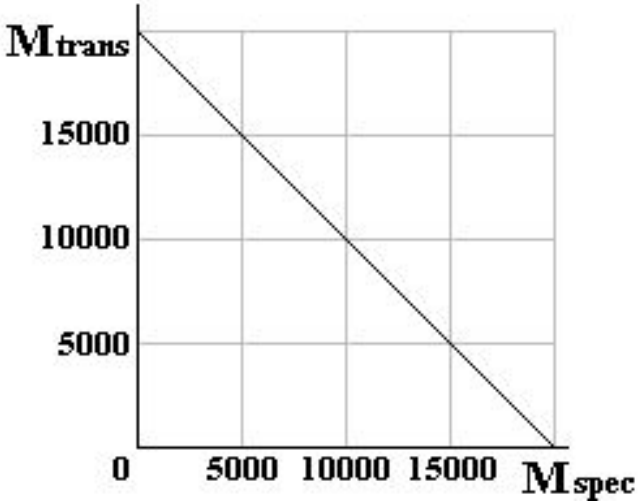




What happens when government spending is increased?

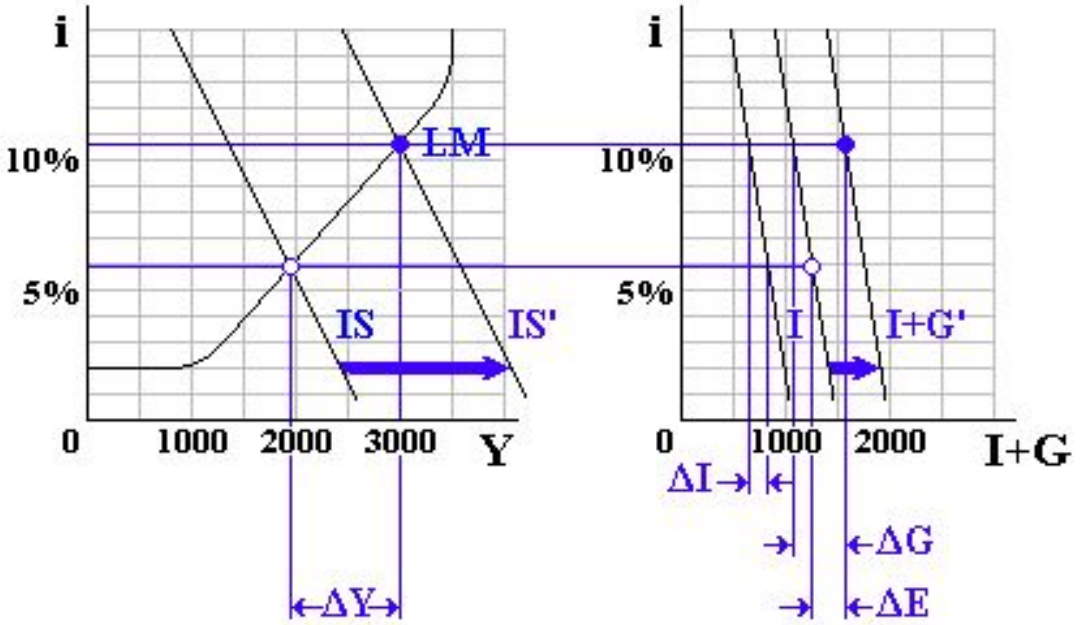
But the actual change in income is governed by the "spending multiplier."

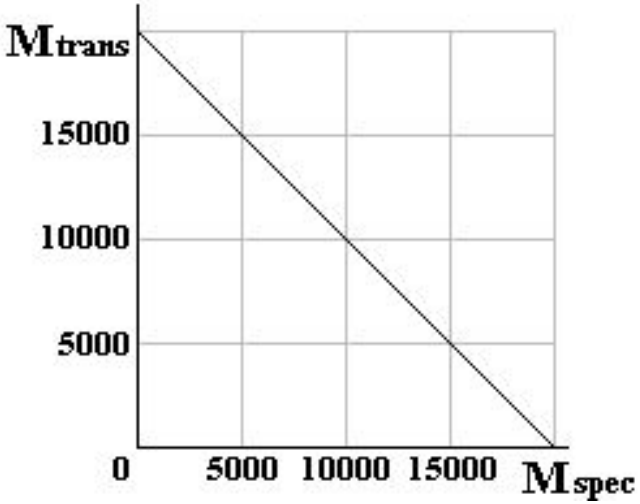




What happens when government spending is increased?

But the actual change in income is affected by the "crowding out" of investment.

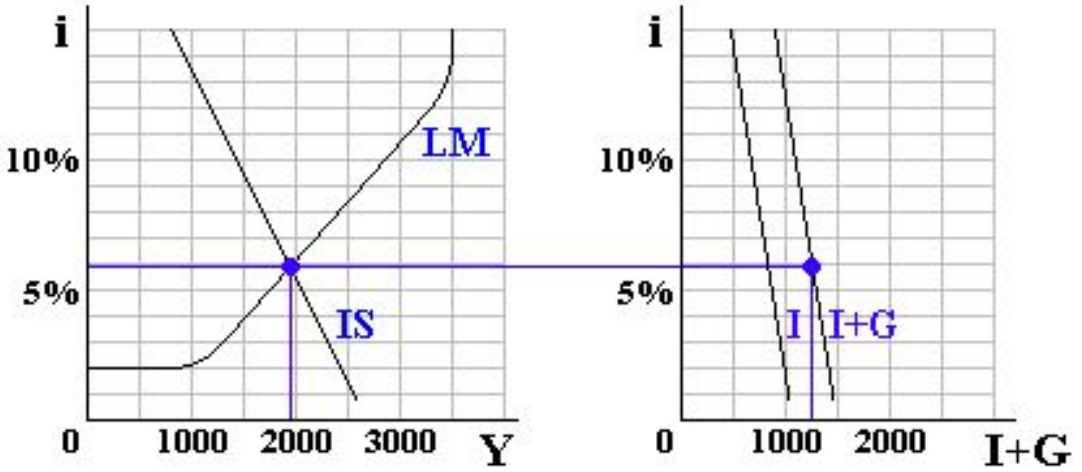


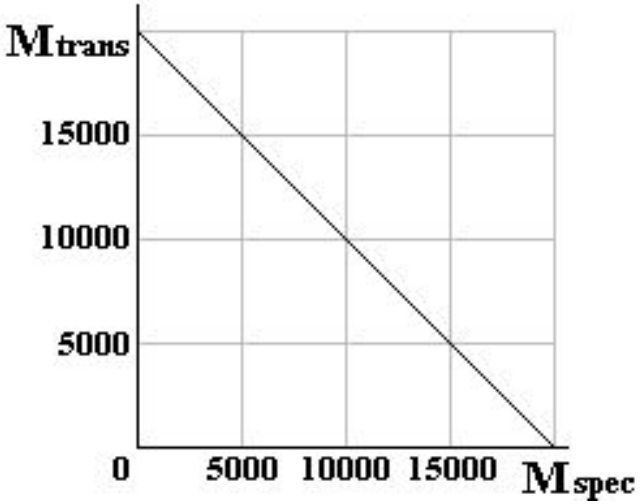


ΔG = inc. in gov't spending
ΔI = "crowding out"
ΔE = net inc. in spending

$$\Delta Y = \frac{1}{(1 - b)} \Delta E$$

What happens when the money supply is increased?





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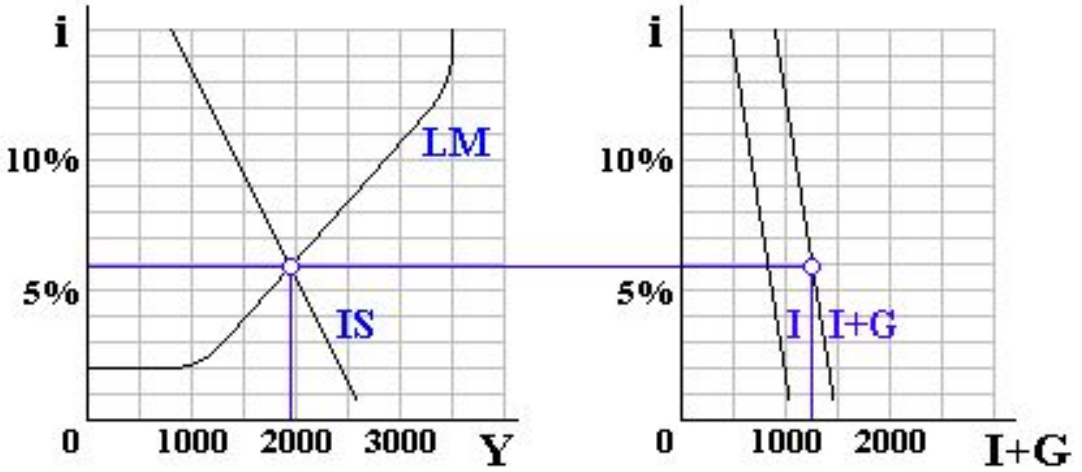
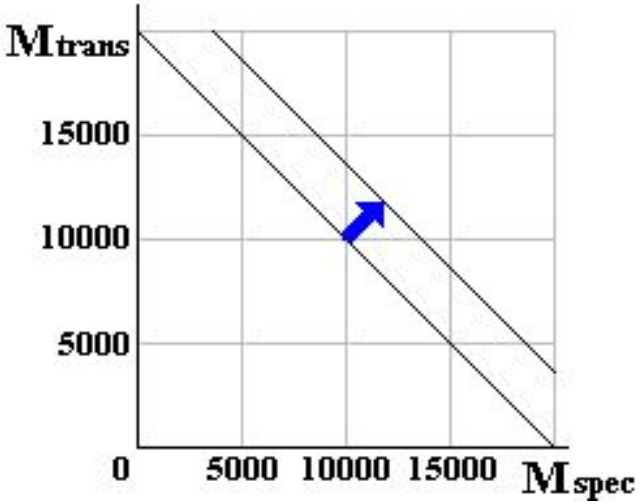
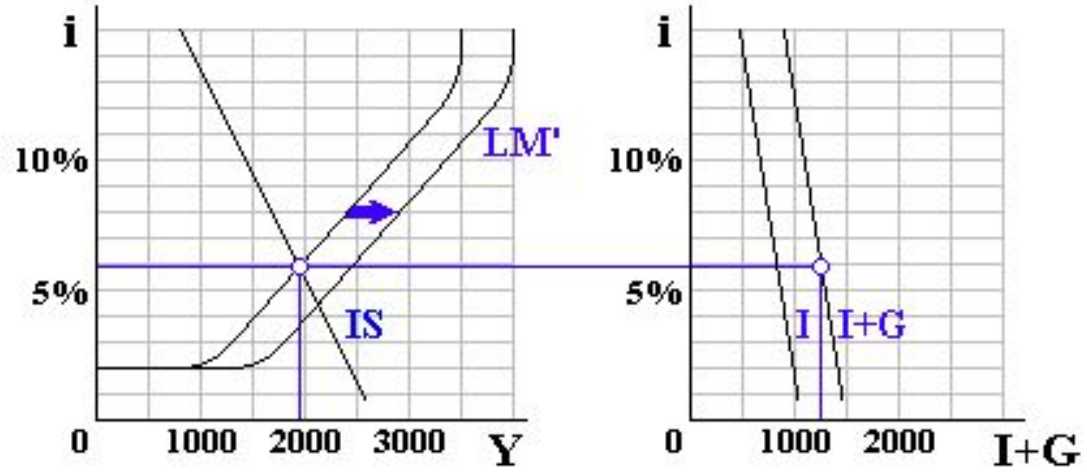
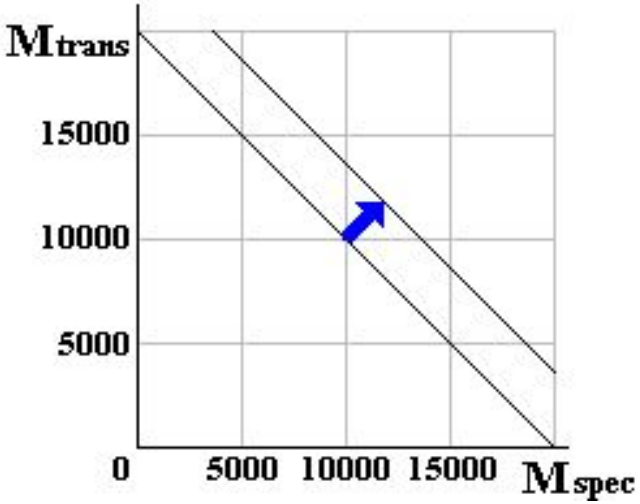




What happens when the money supply is increased?

The LM curve shifts rightward, lowering interest rates.





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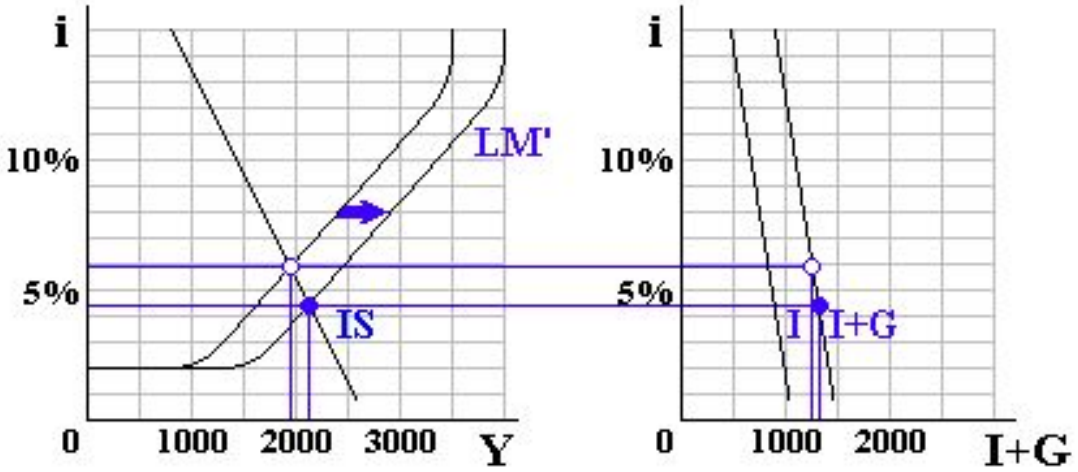

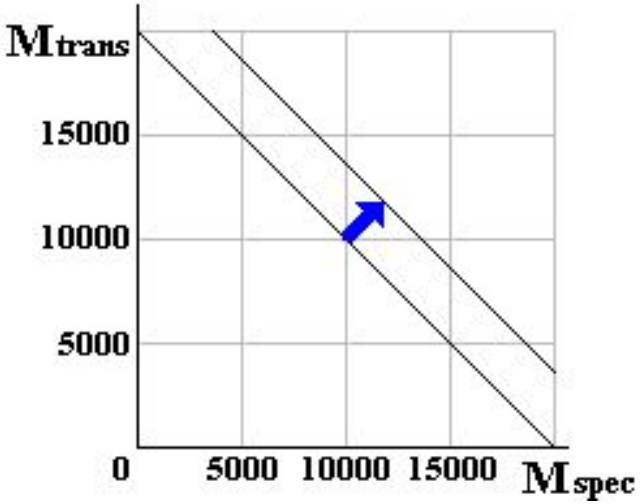

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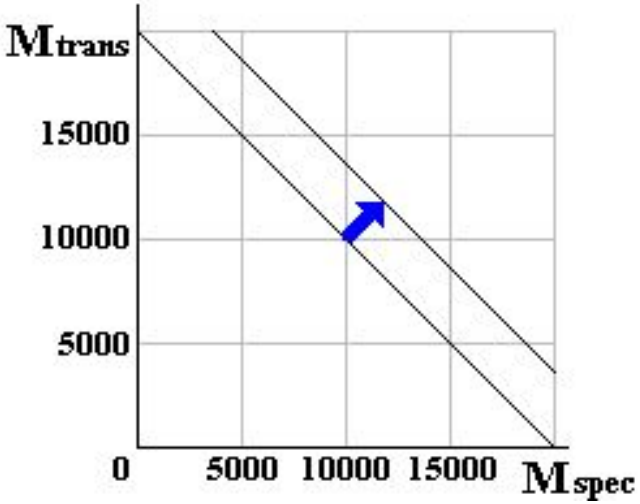
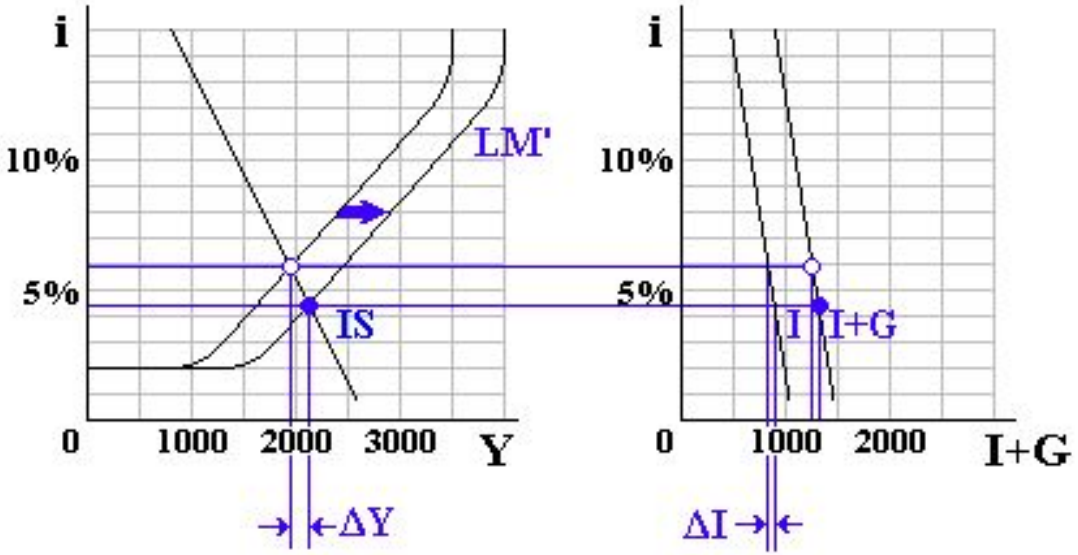
Note that the multiplier applies to the interest-induced change in investment.

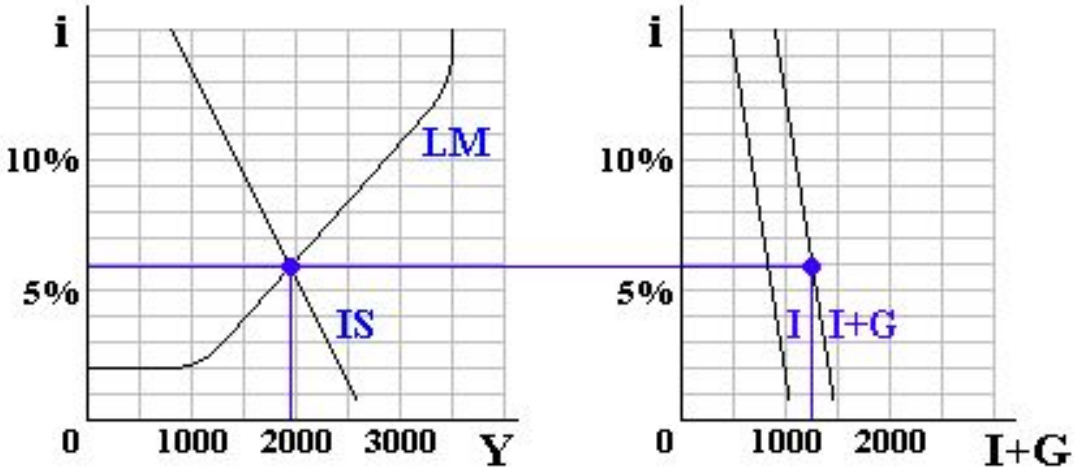


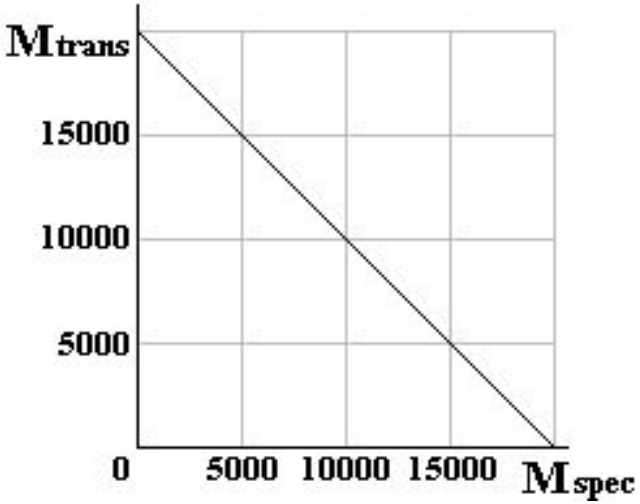


$$\Delta Y = \frac{1}{(1 - b)} \Delta I$$

Because of the inelasticity of investment demand, monetary policy is relatively ineffective.

What happens when an increase in government spending is "fully accommodated" by the central bank?





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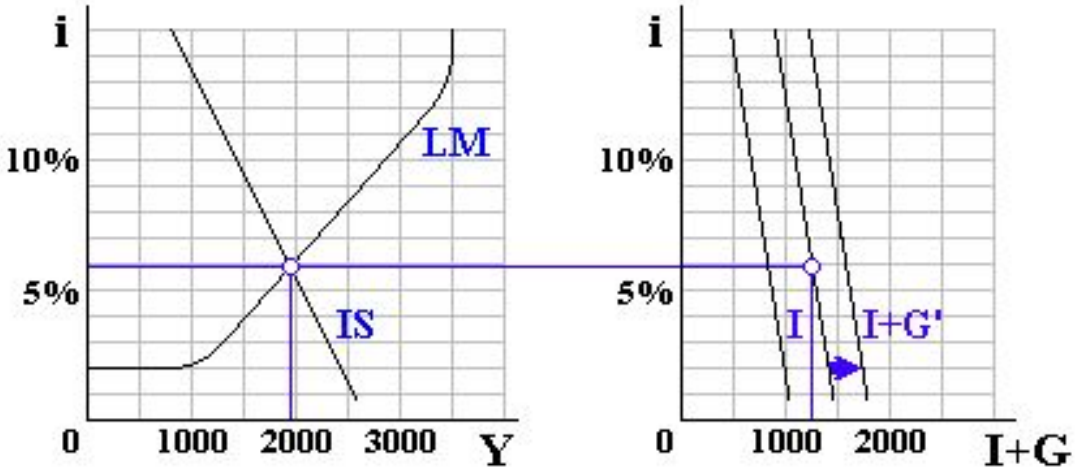
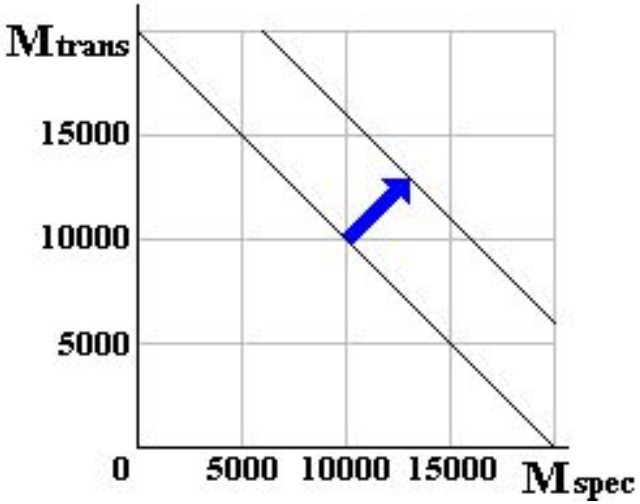
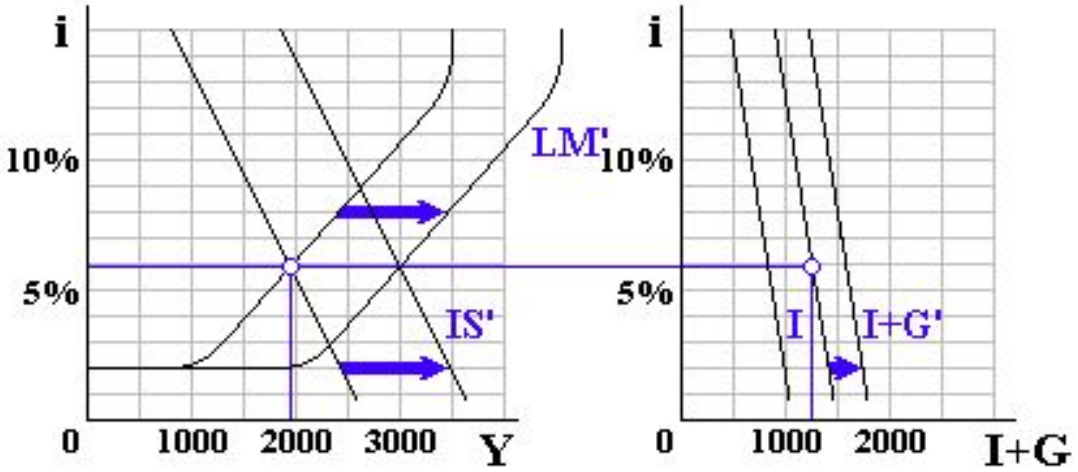
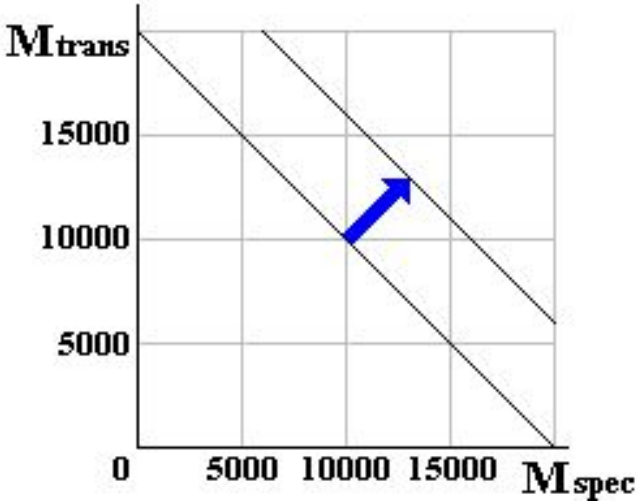




What happens when an increase in government spending is "fully accommodated" by the central bank?

Both IS and LM shift rightward, leaving interest rates unchanged.





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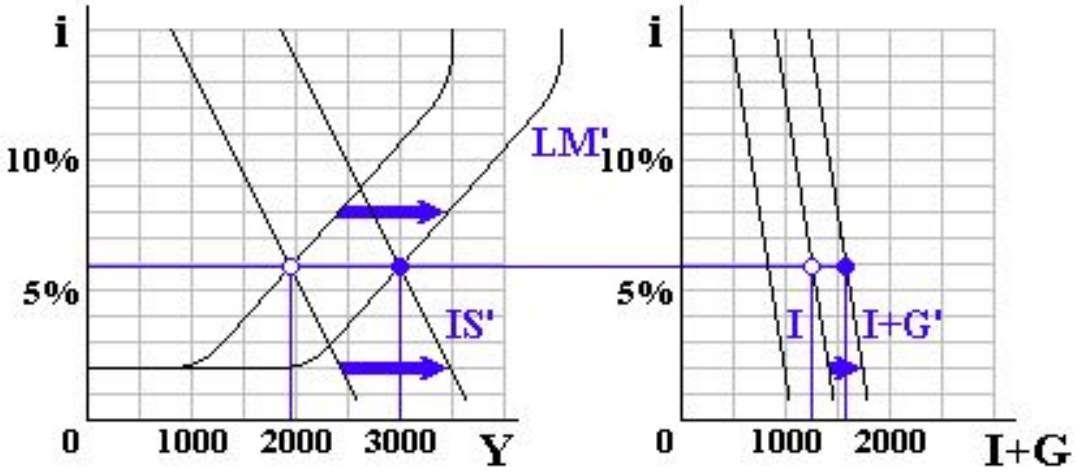

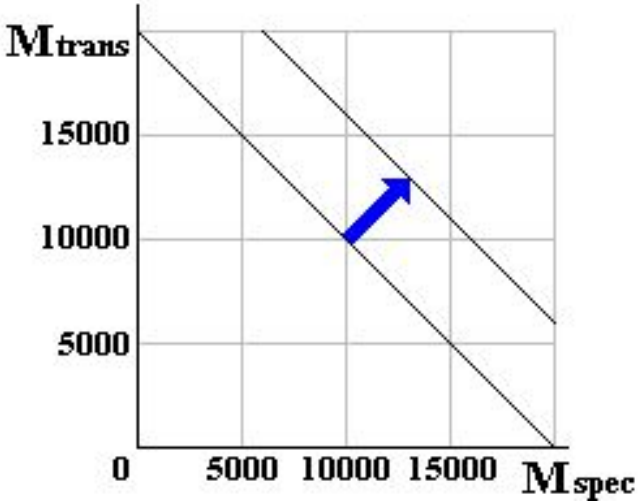

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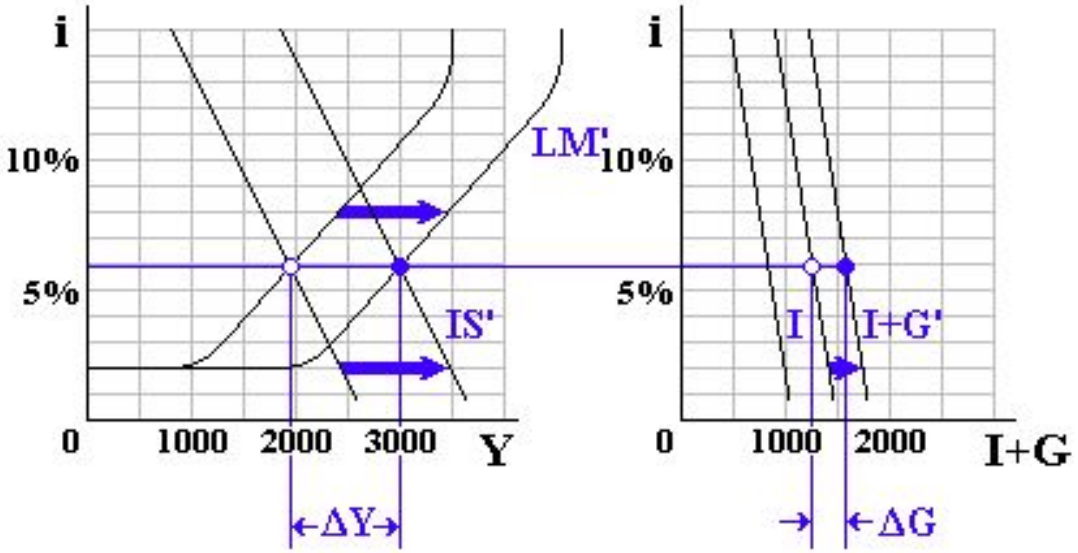

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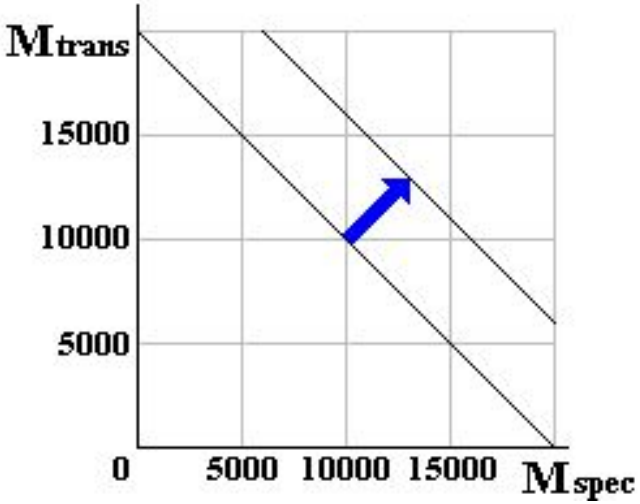
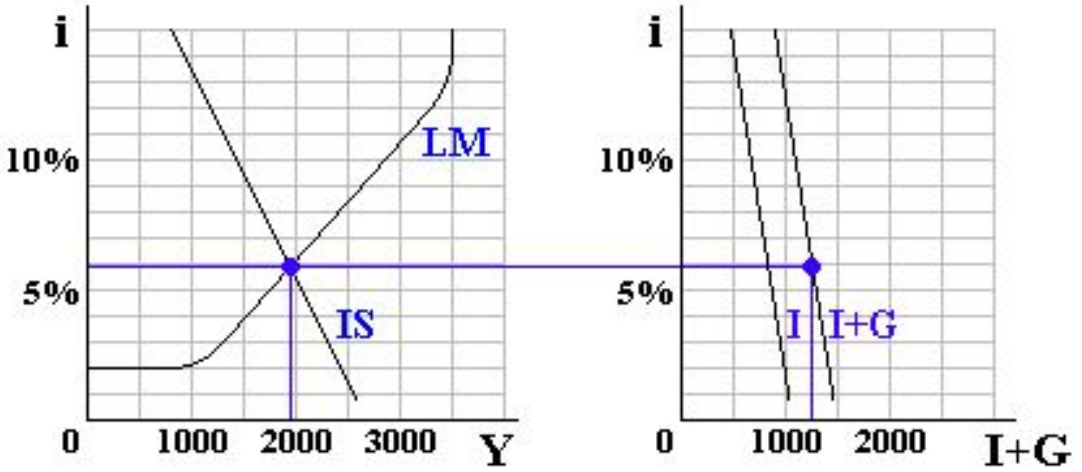
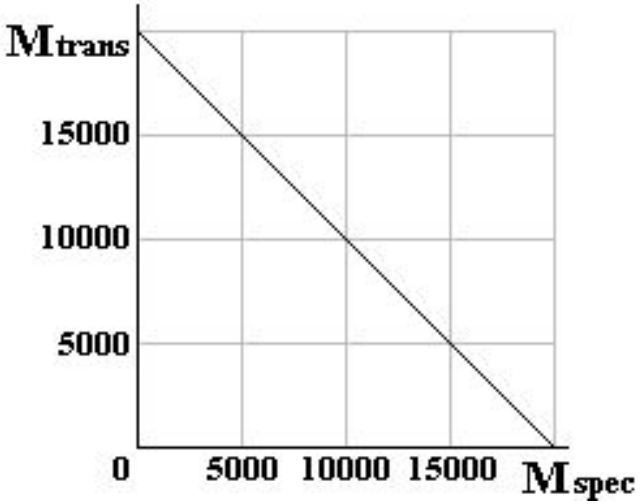


Suppose the economy is in a liquidity trap?





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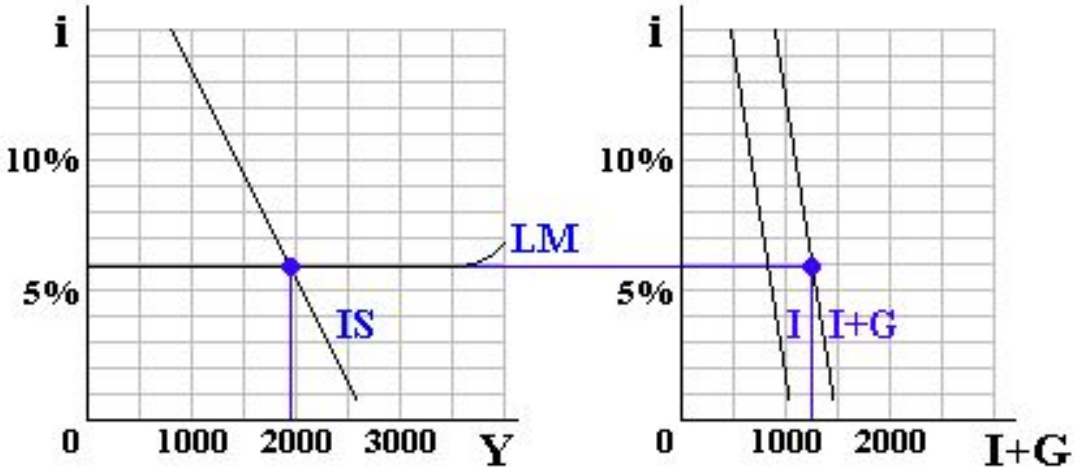

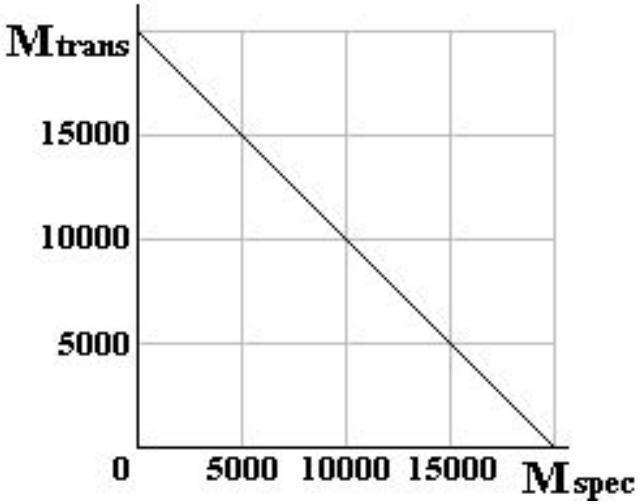

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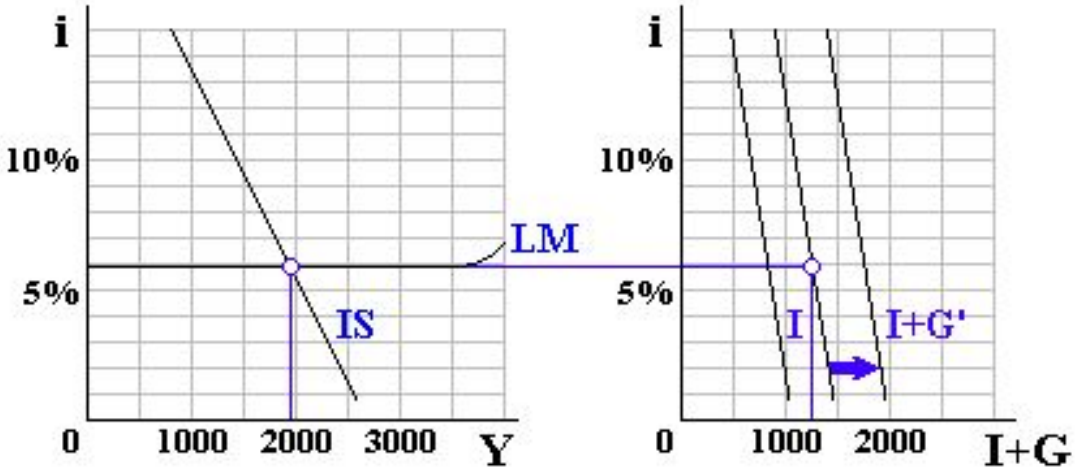

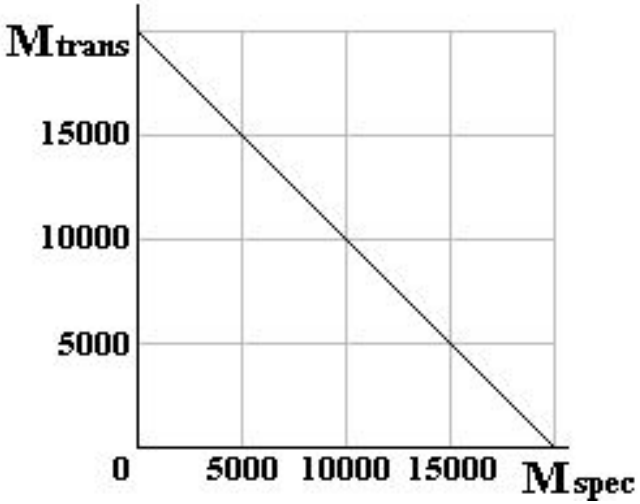

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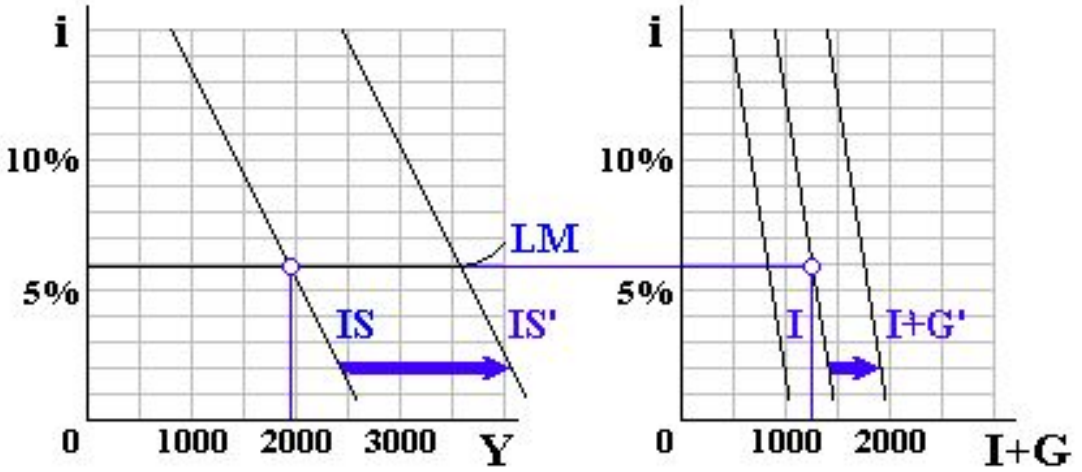

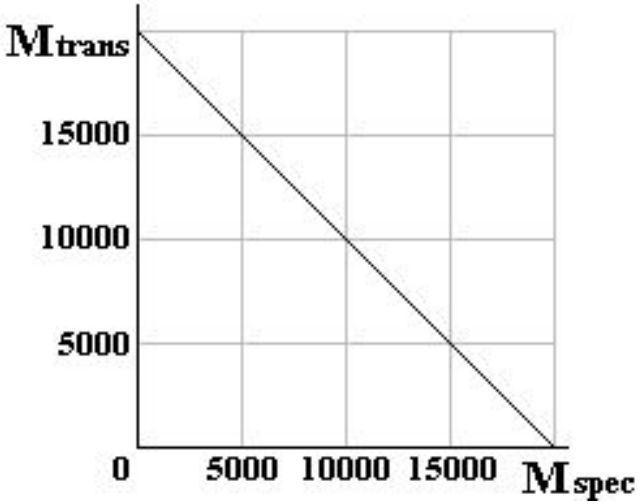

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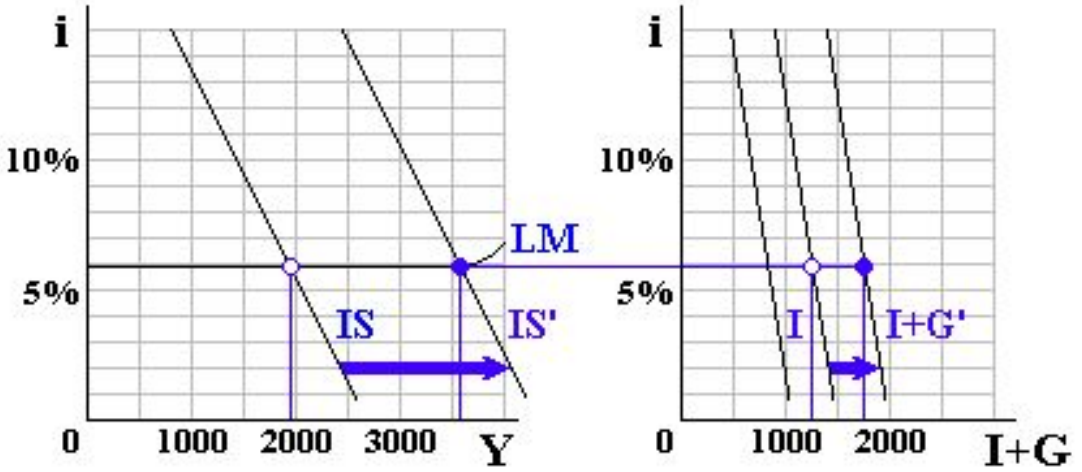

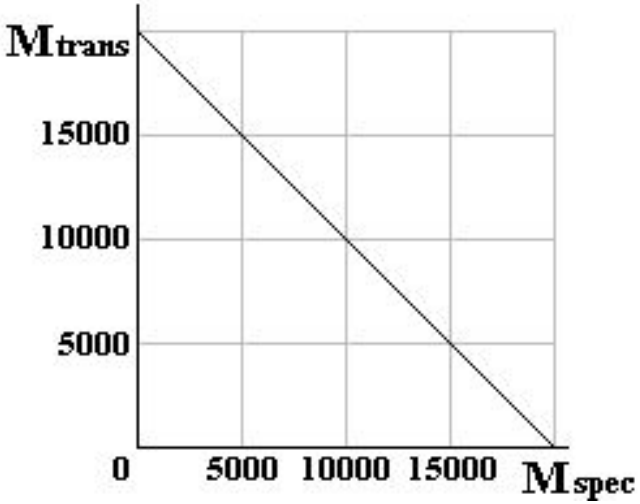

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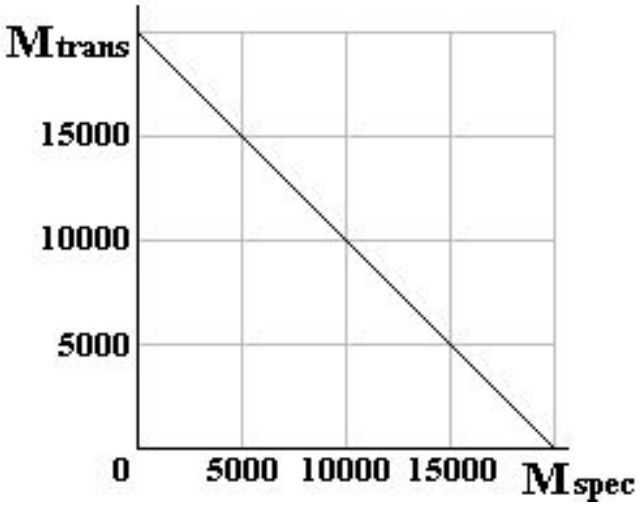

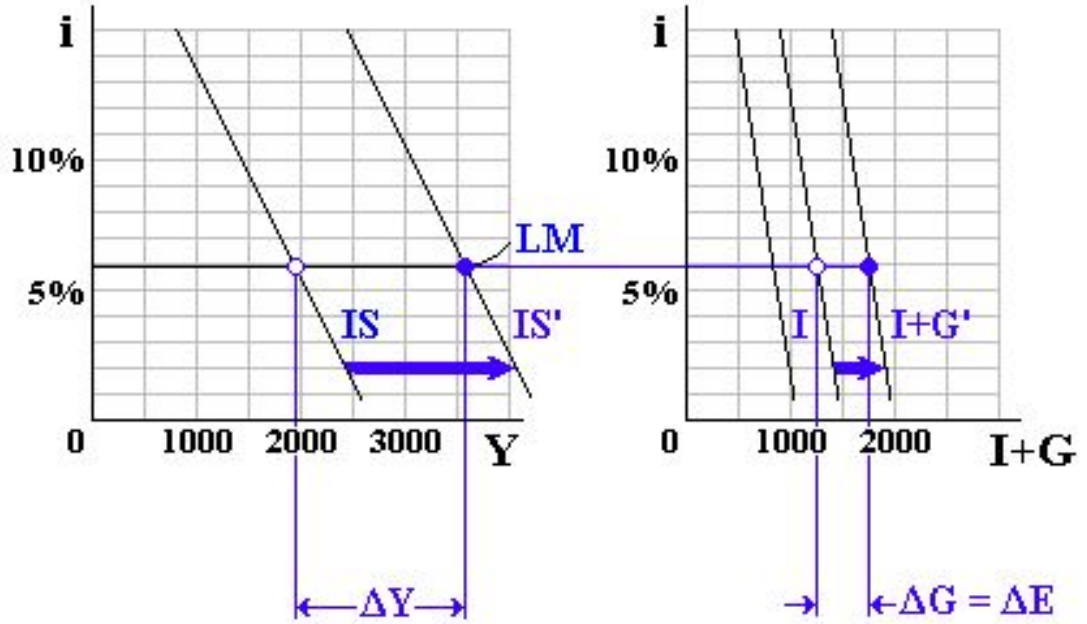

ΔG = inc. in gov't spending
ΔI = "crowding out" = 0
ΔE = ΔG

$$\Delta Y = \frac{1}{(1 - b)} \Delta G$$

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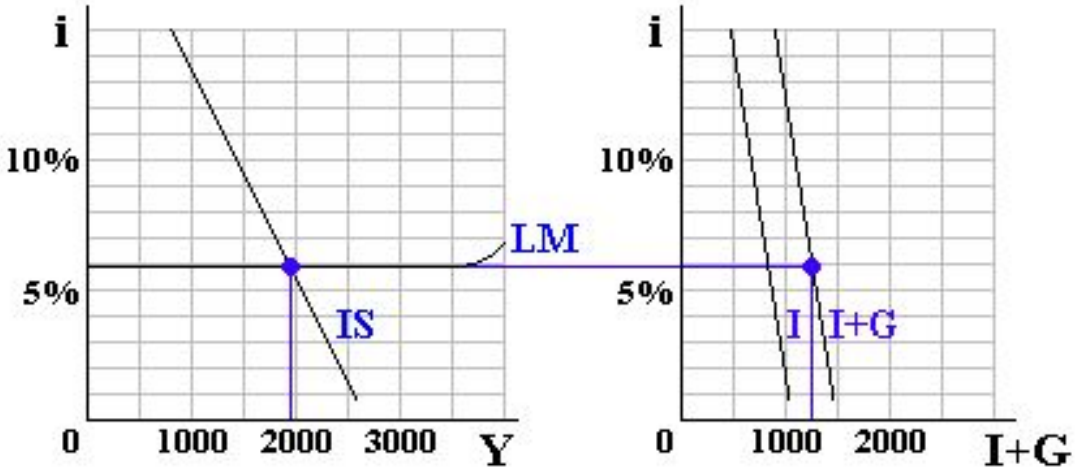

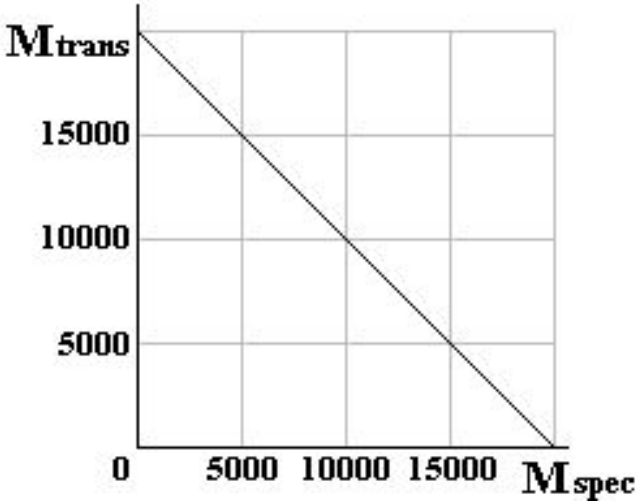

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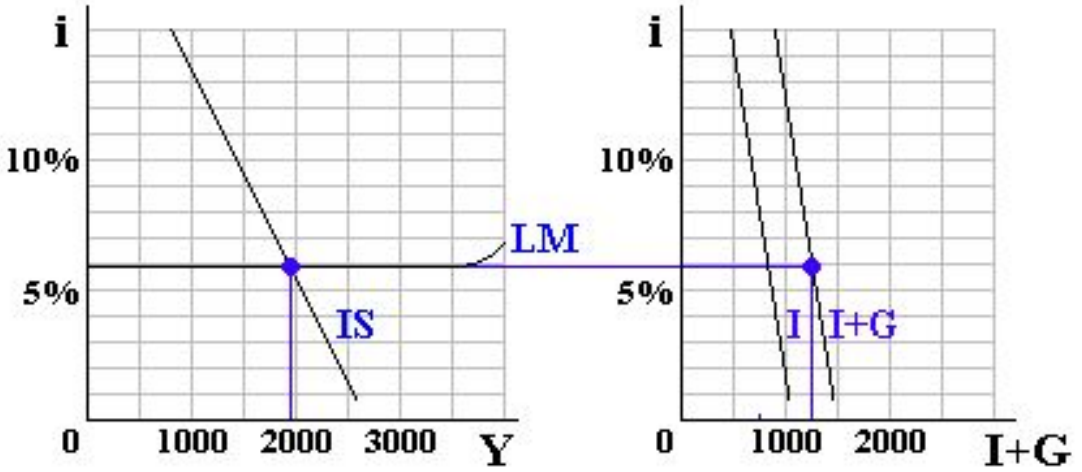

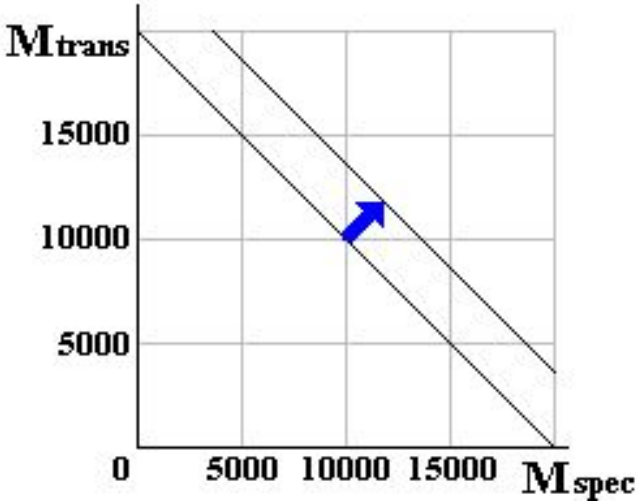

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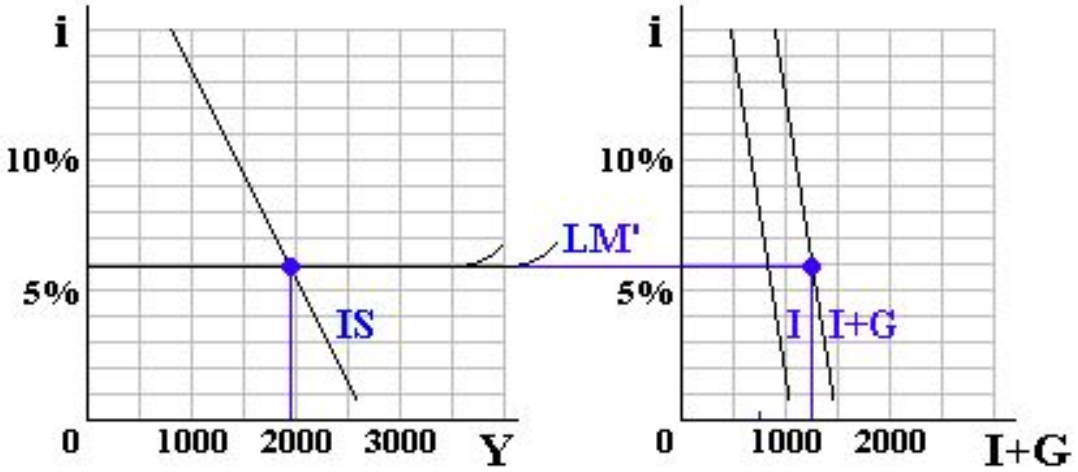

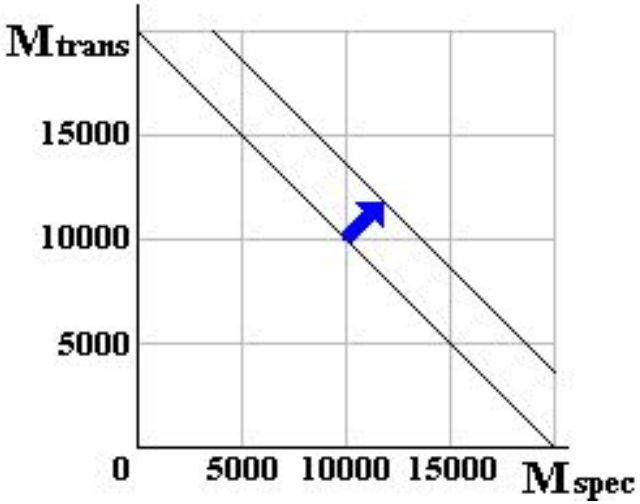

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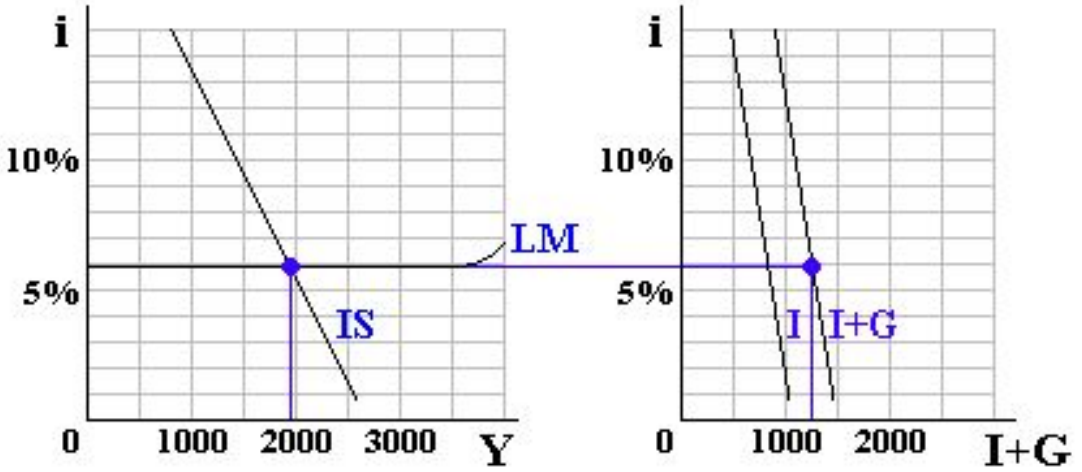

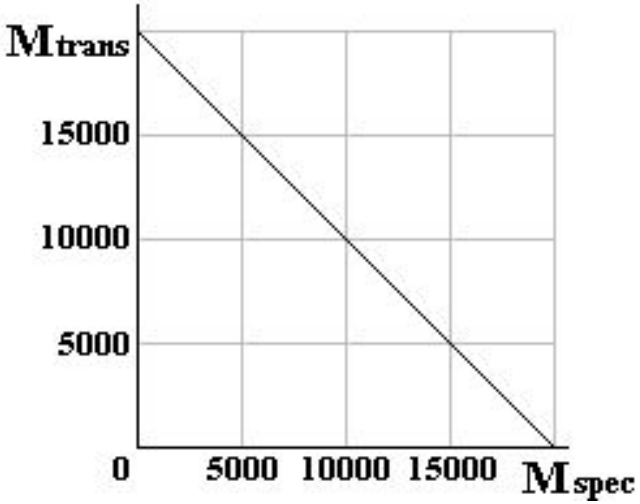

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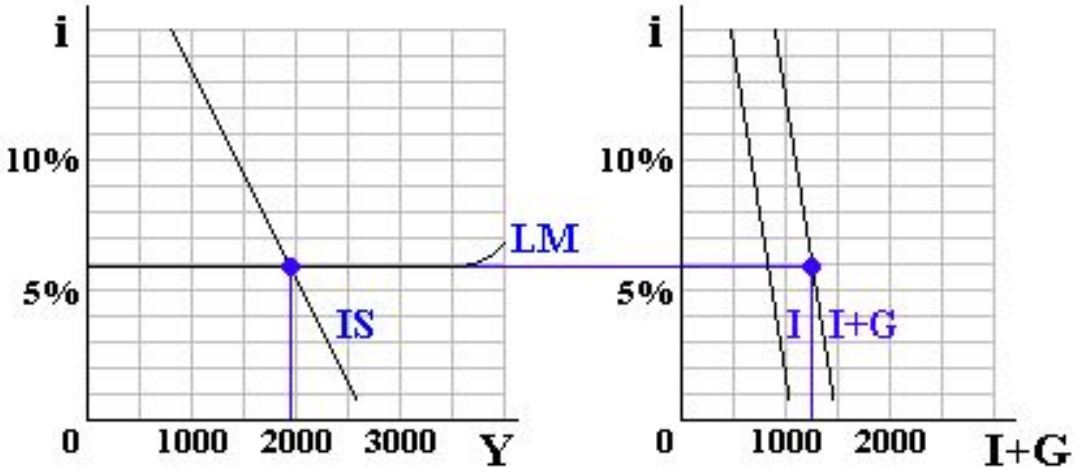

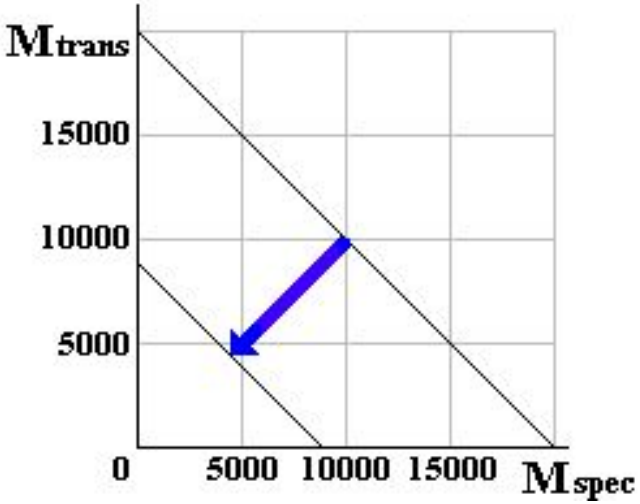

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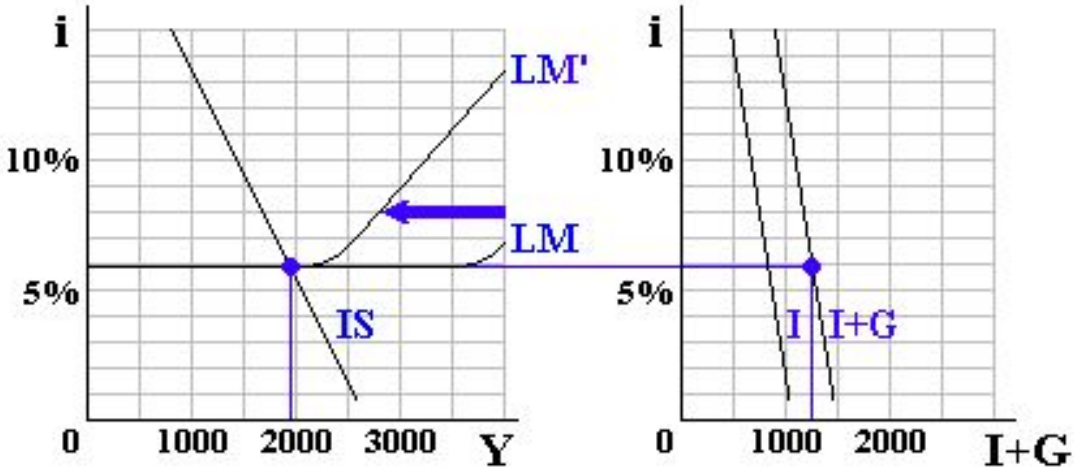

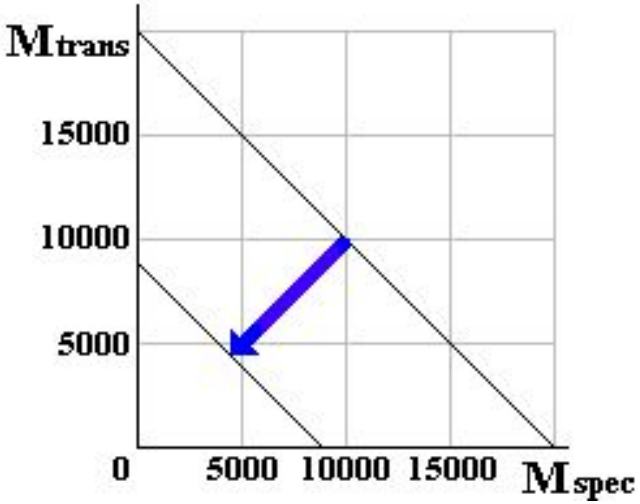

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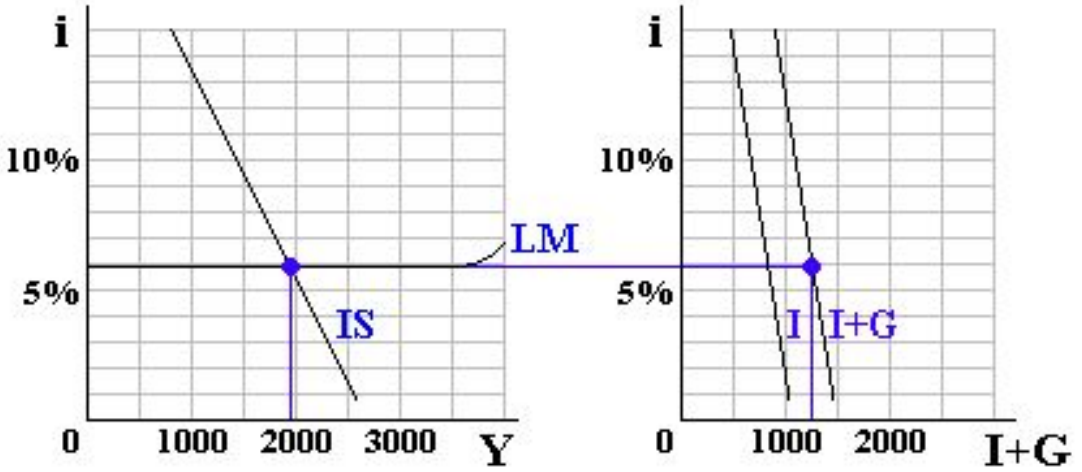
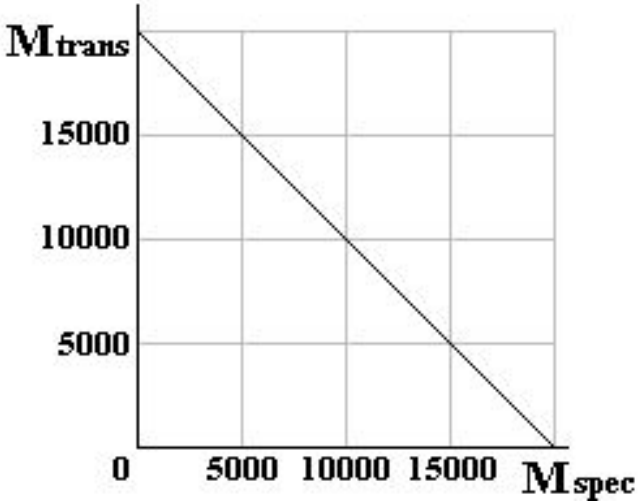
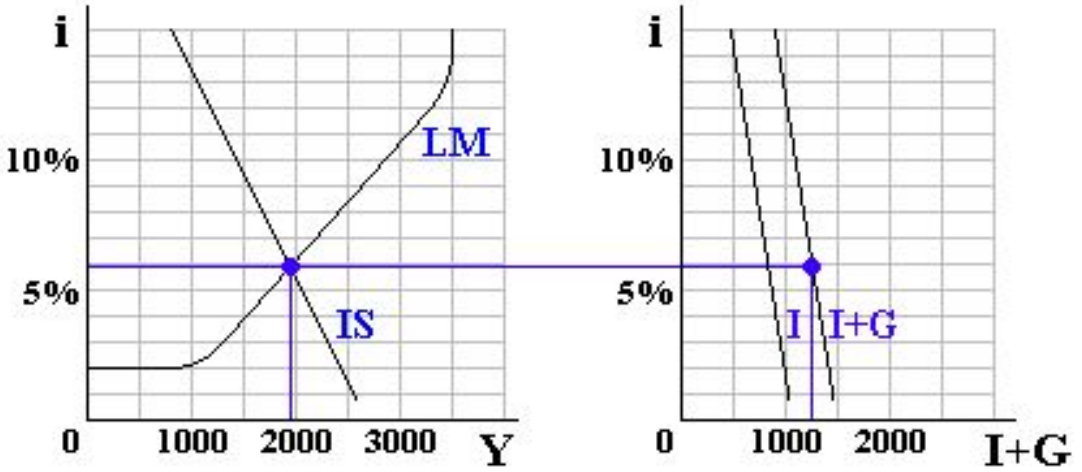
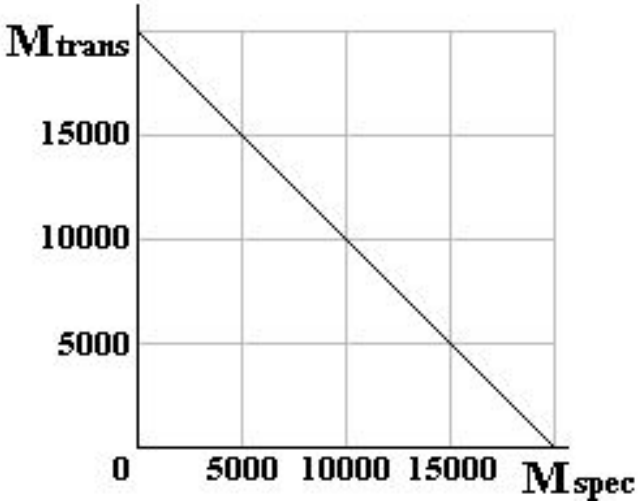




Suppose the economy is in the classical region of LM.





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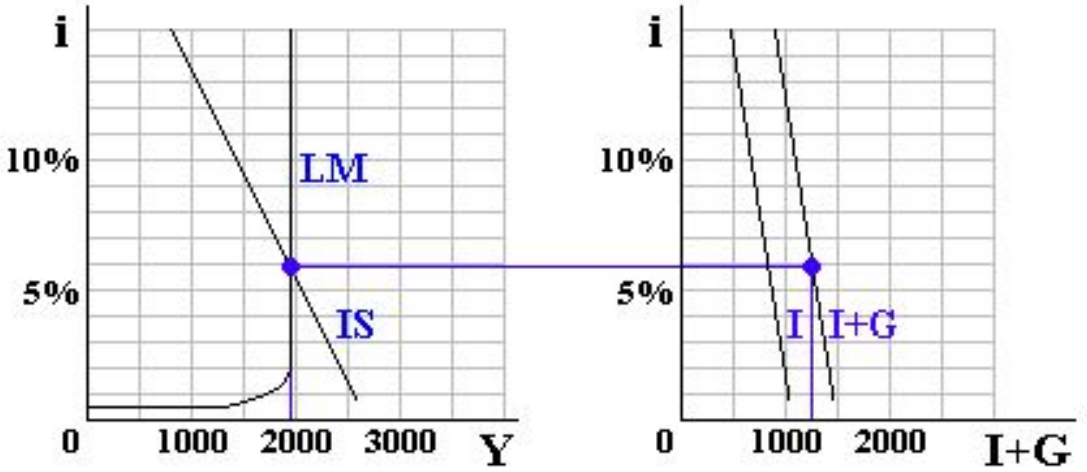

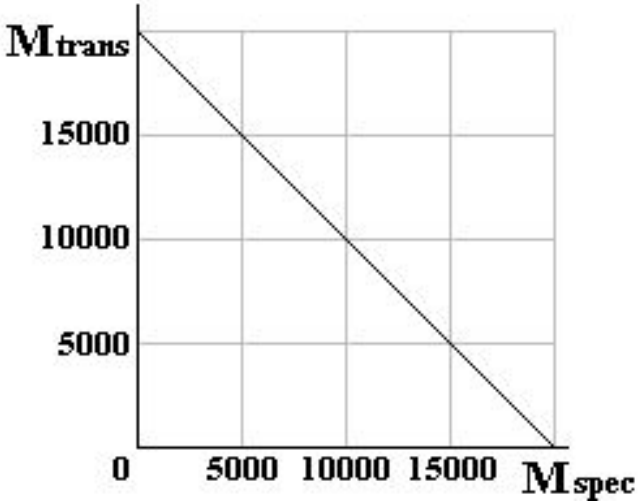

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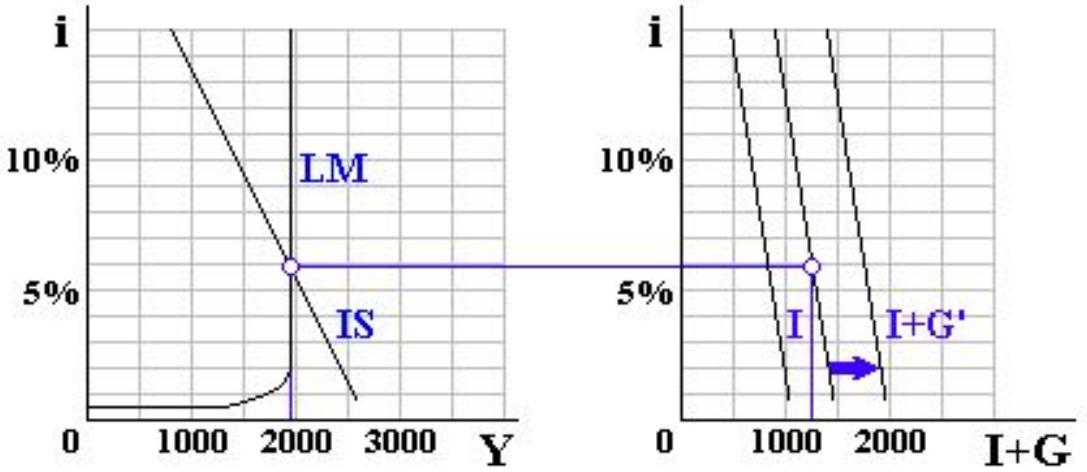

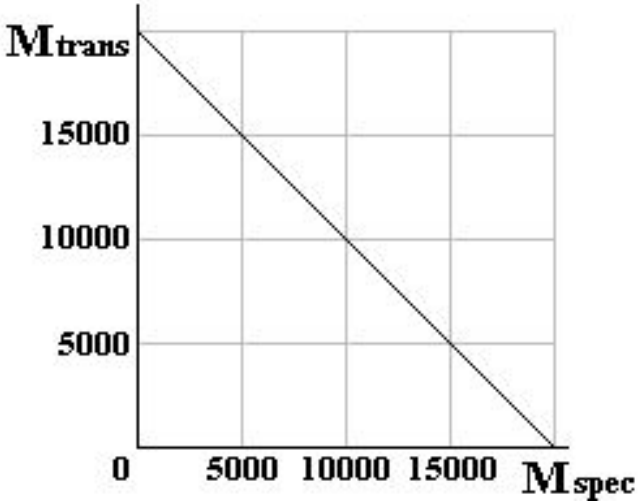

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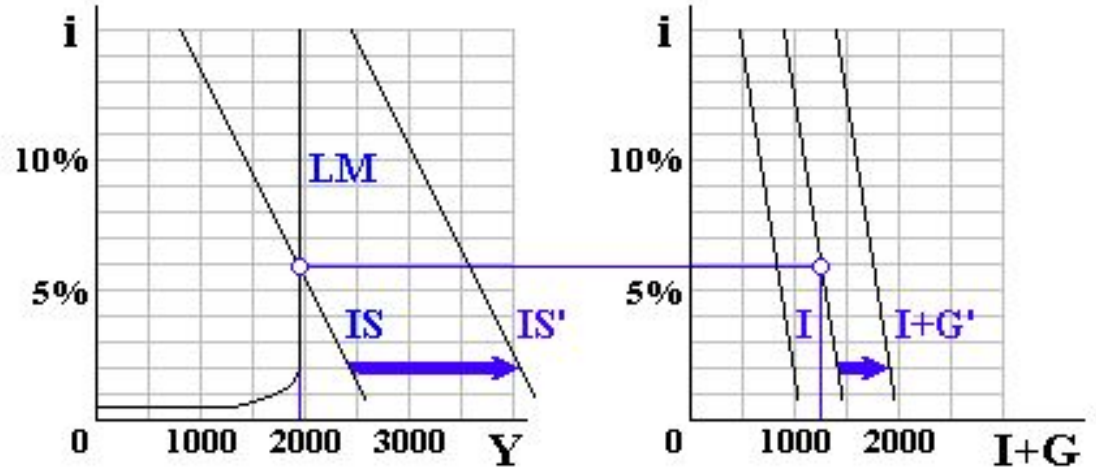

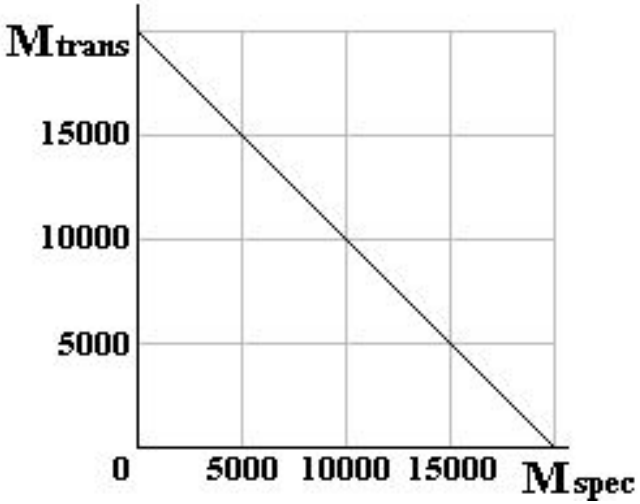

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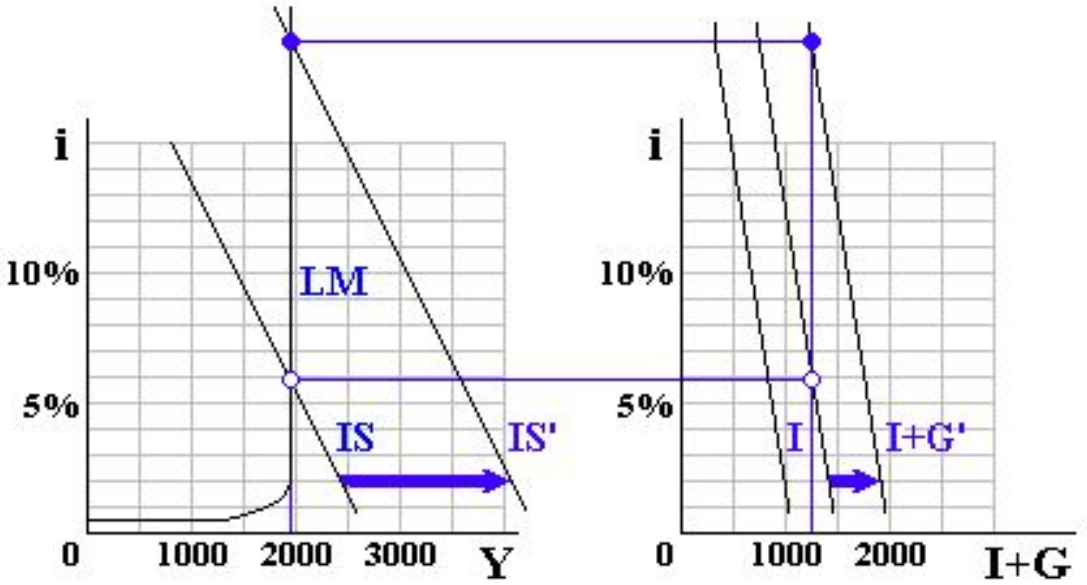

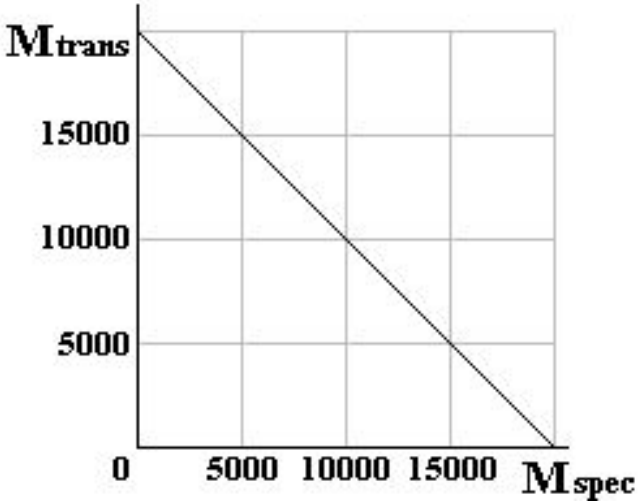

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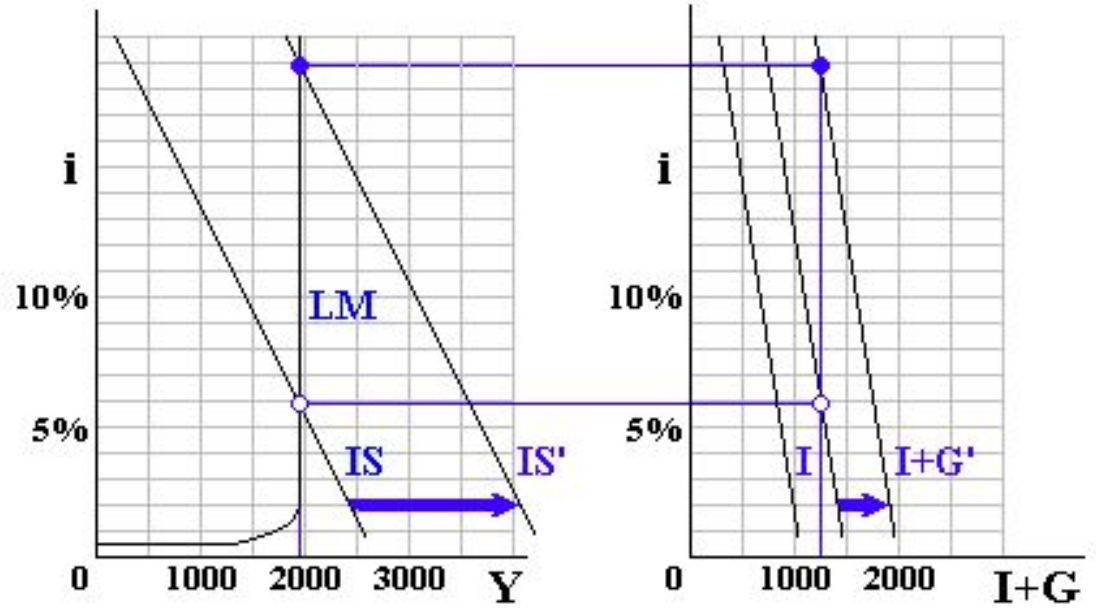

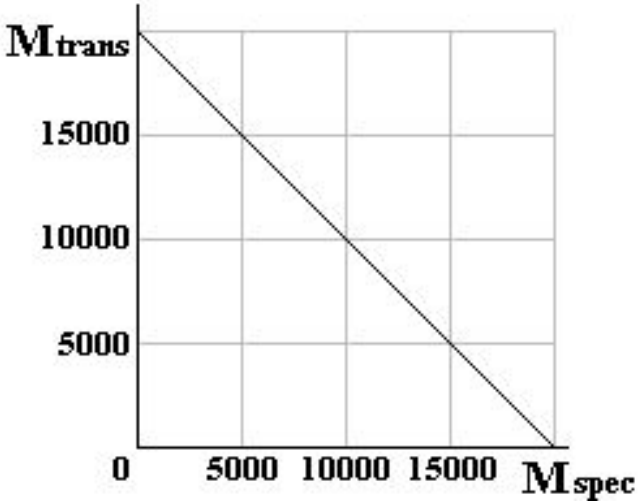

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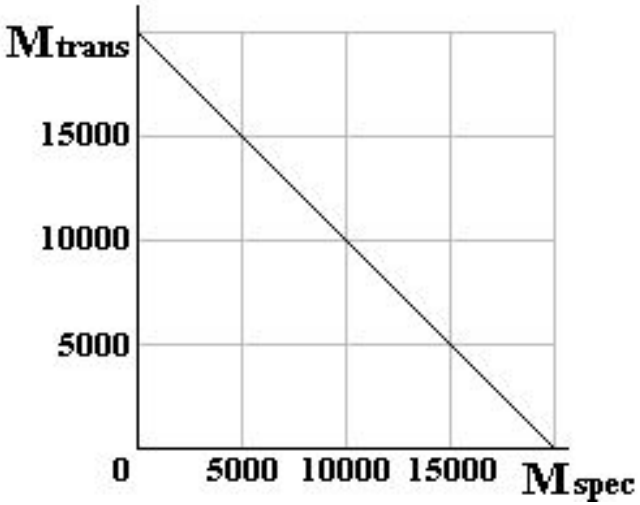

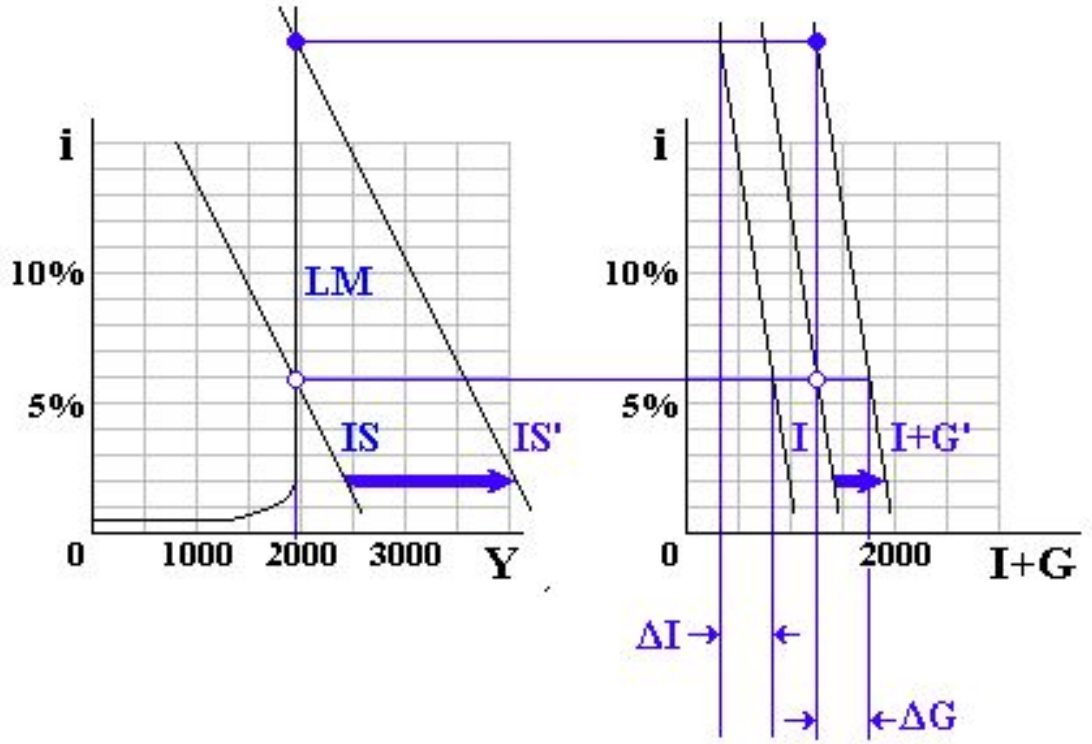

ΔG = inc. in gov't spending
ΔI = "crowding out" = ΔG
ΔE = 0

$$\Delta Y = \frac{1}{(1 - b)} \Delta E = 0$$

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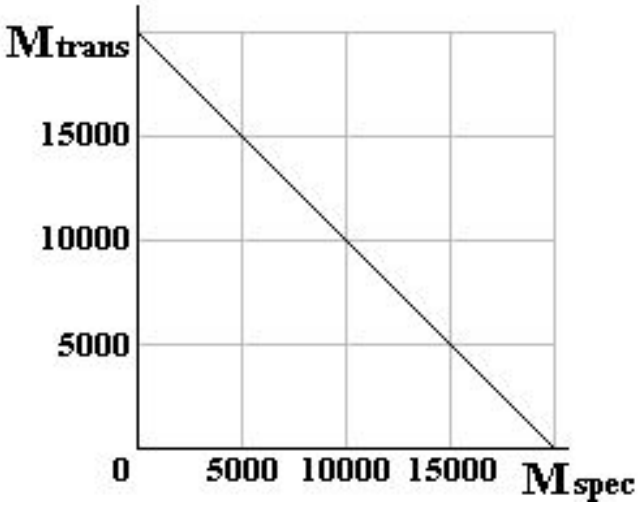

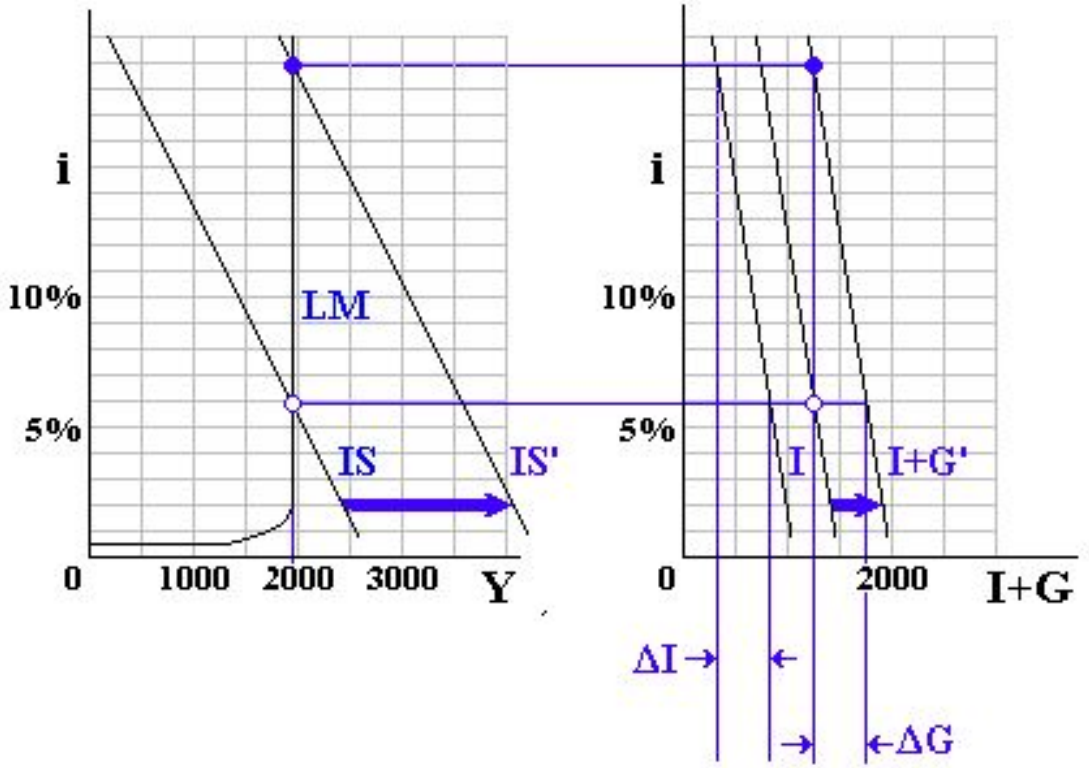

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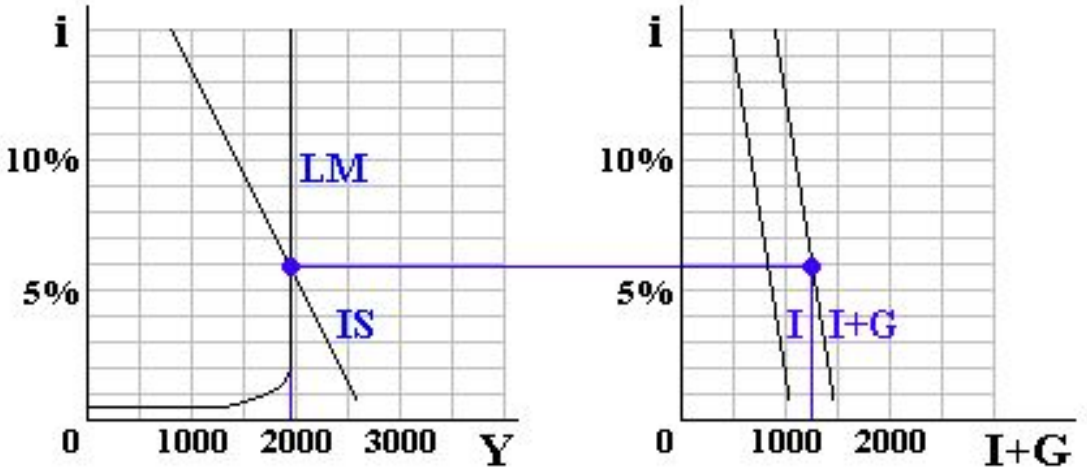

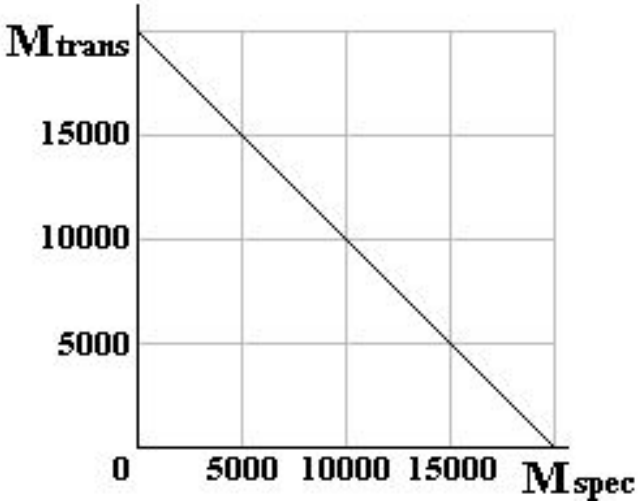

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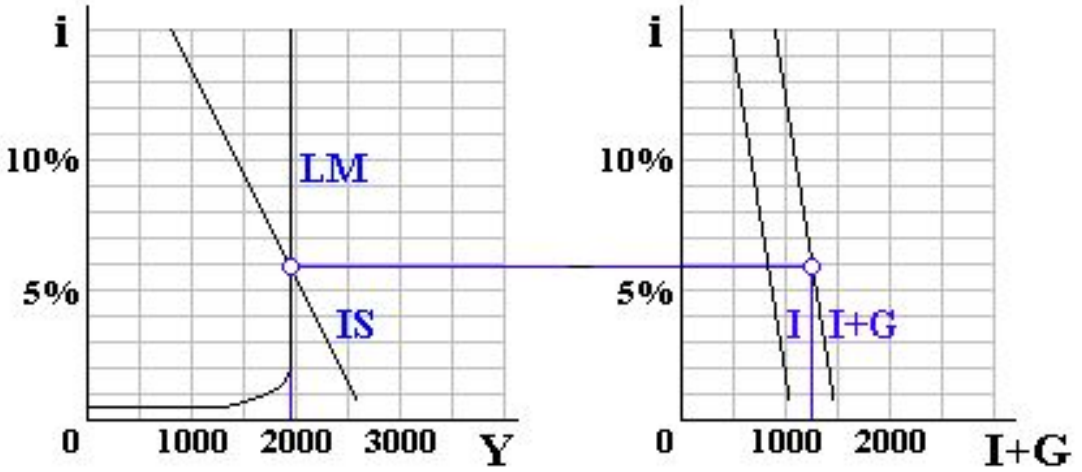

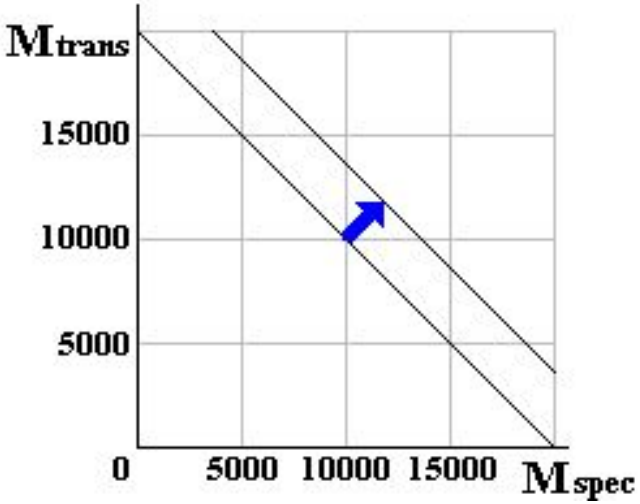

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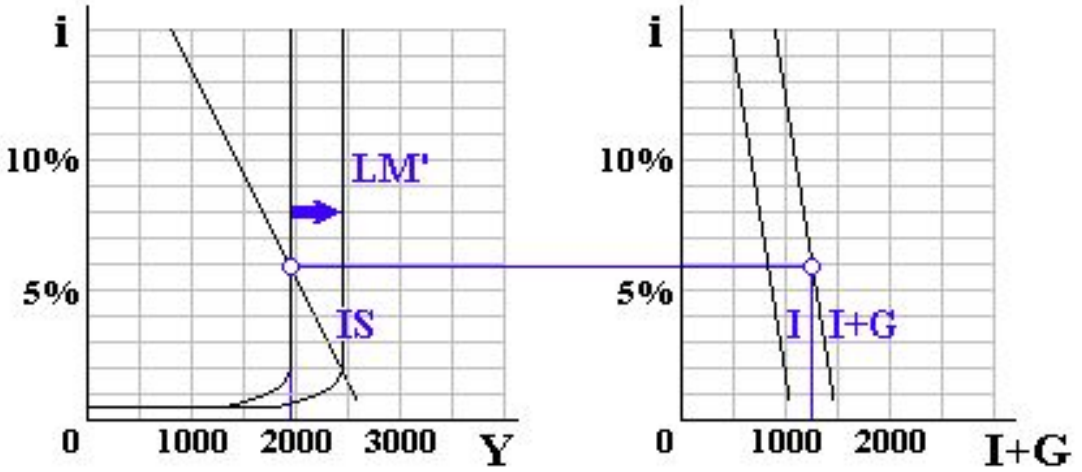

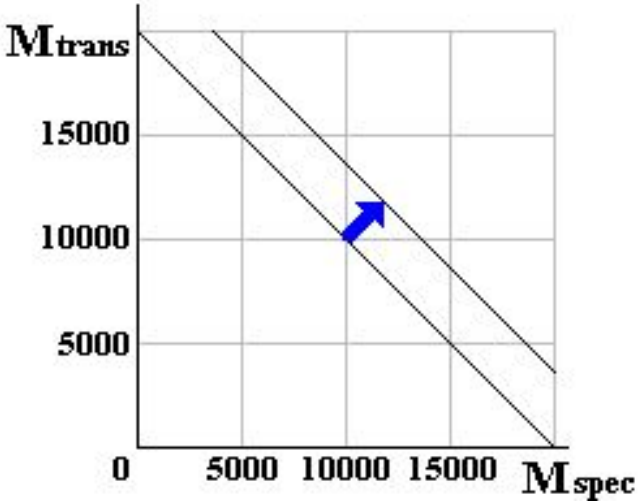

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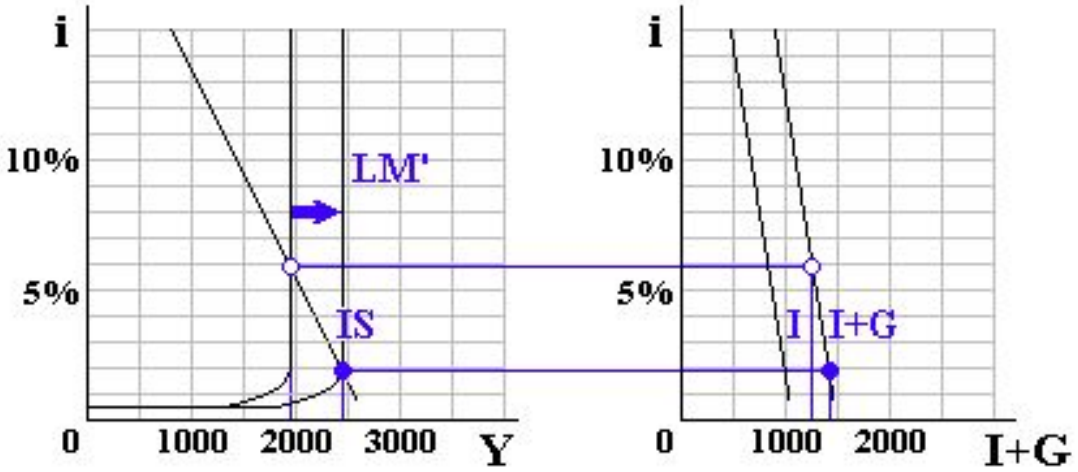

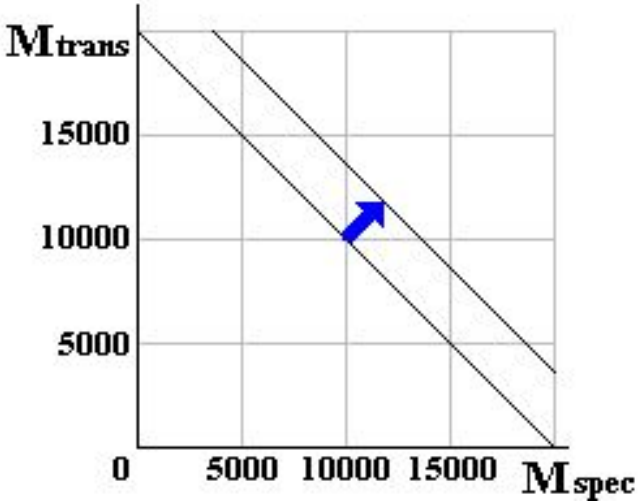

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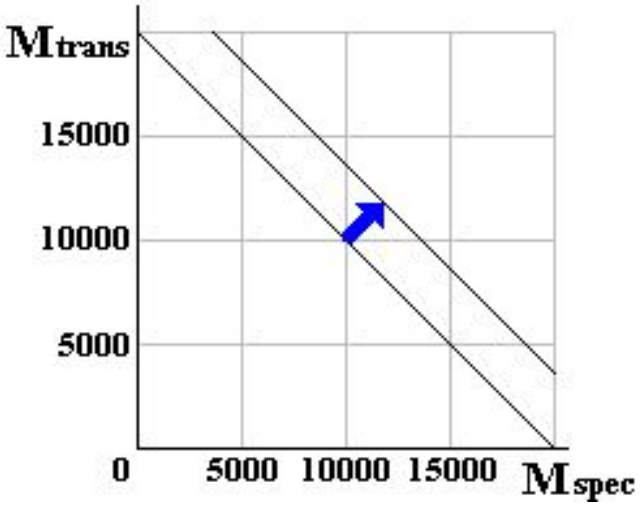

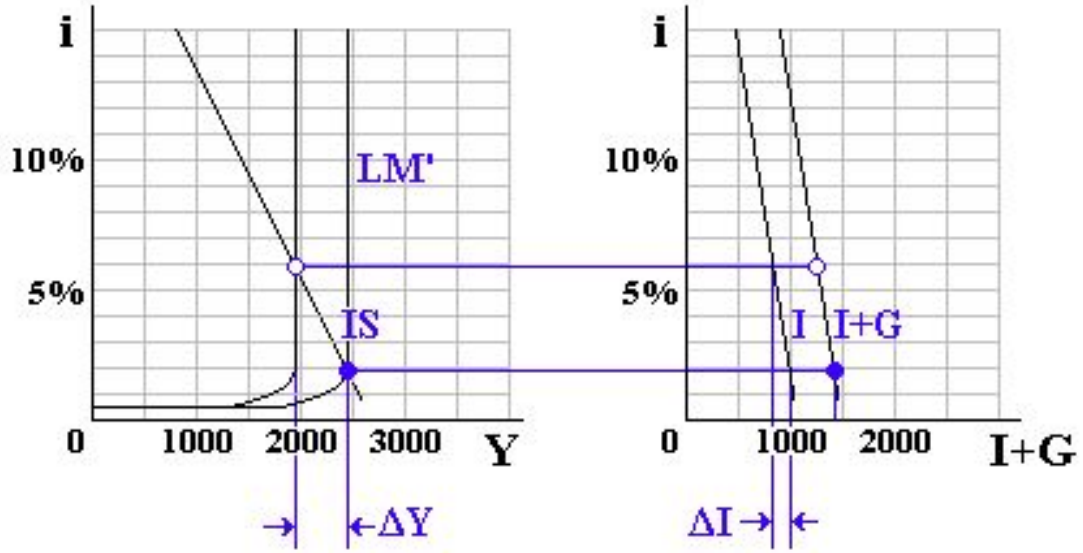

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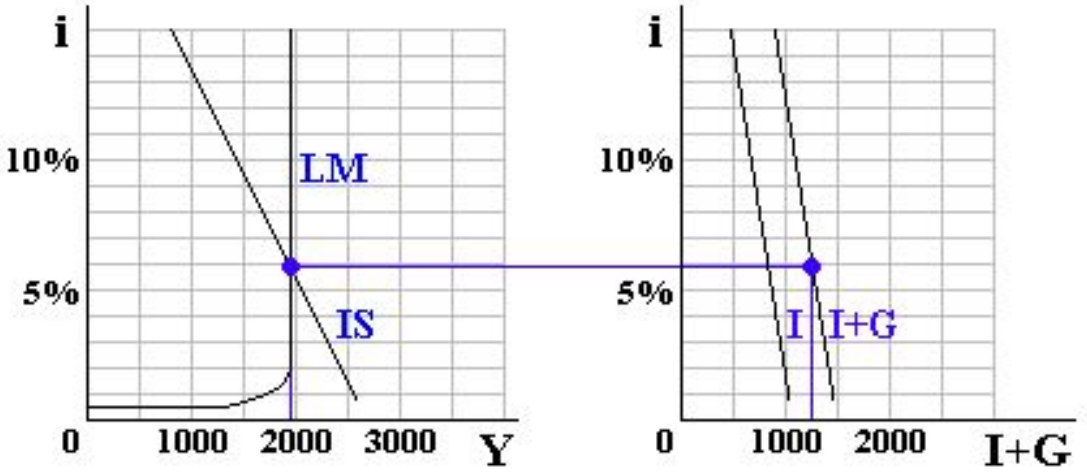
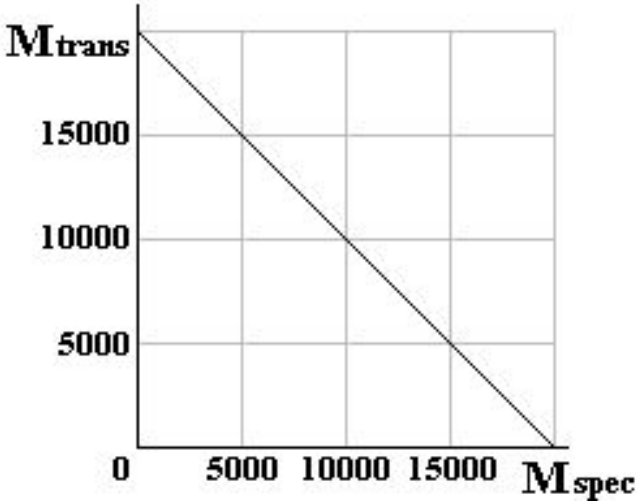
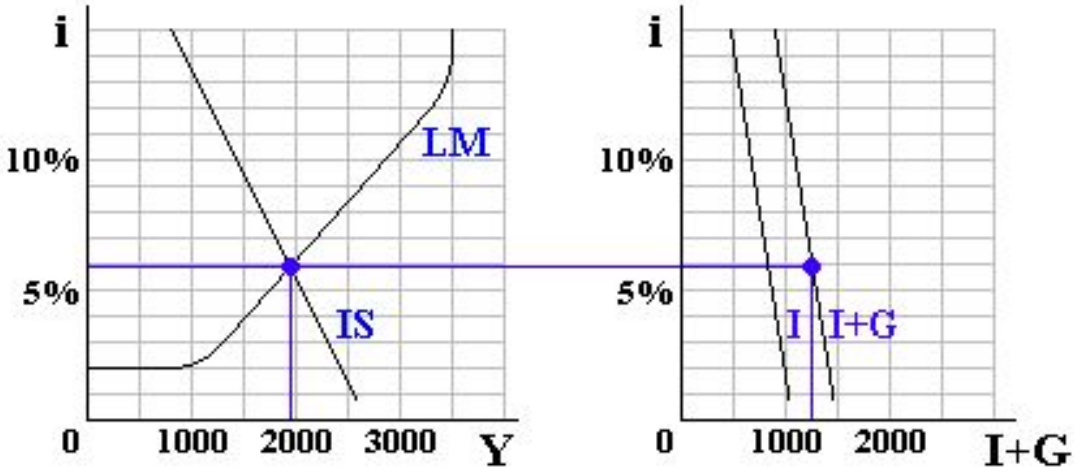
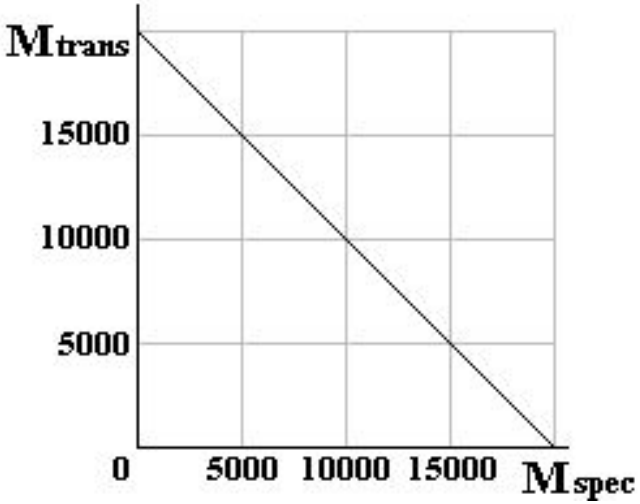




Suppose the investment schedule is perfectly inelastic.





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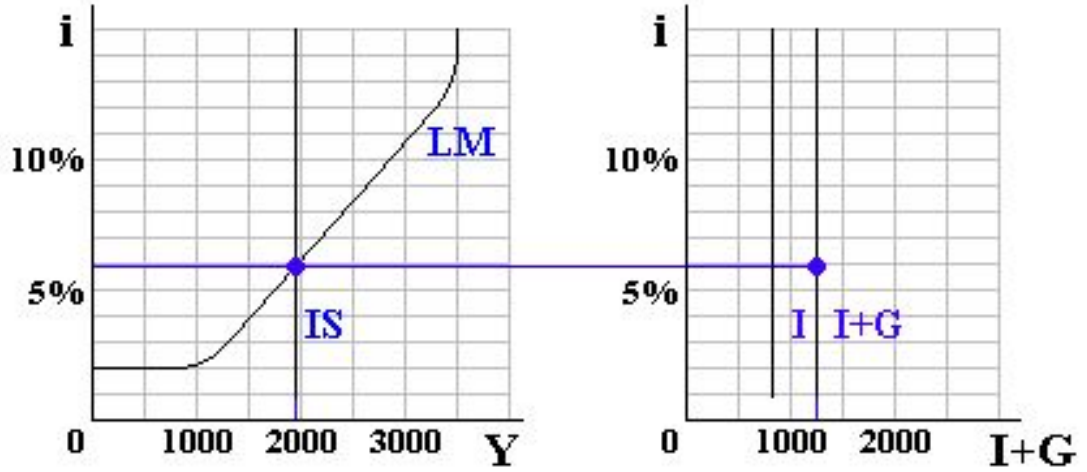

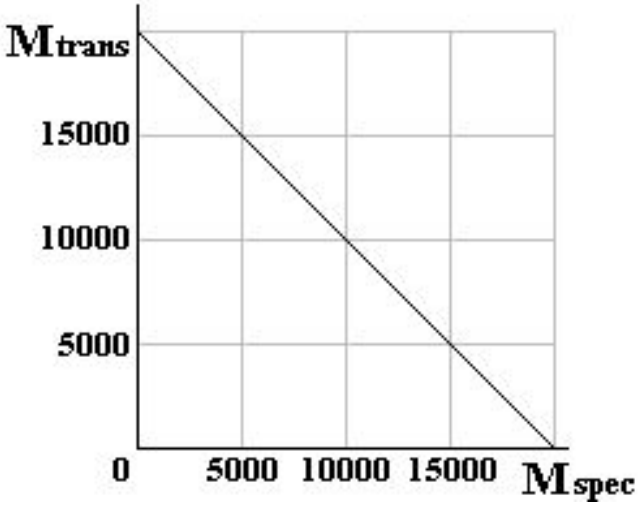

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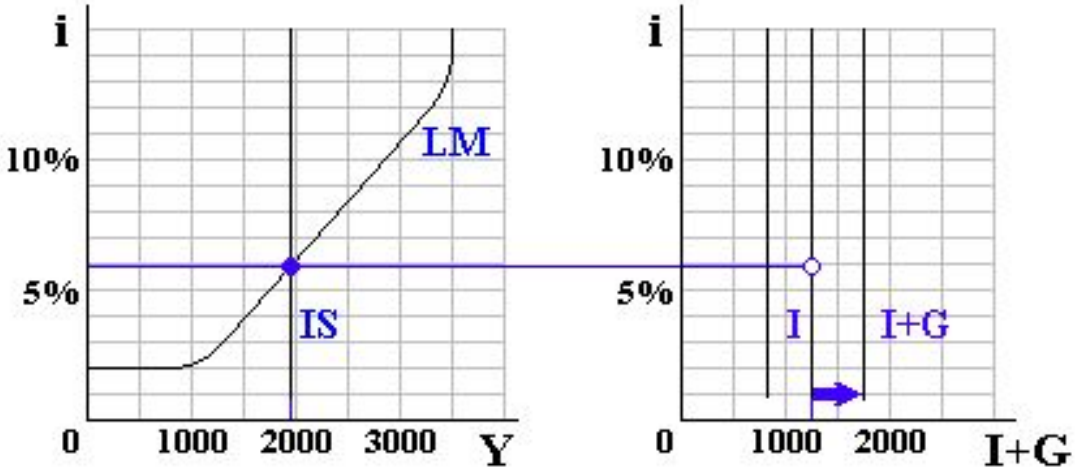

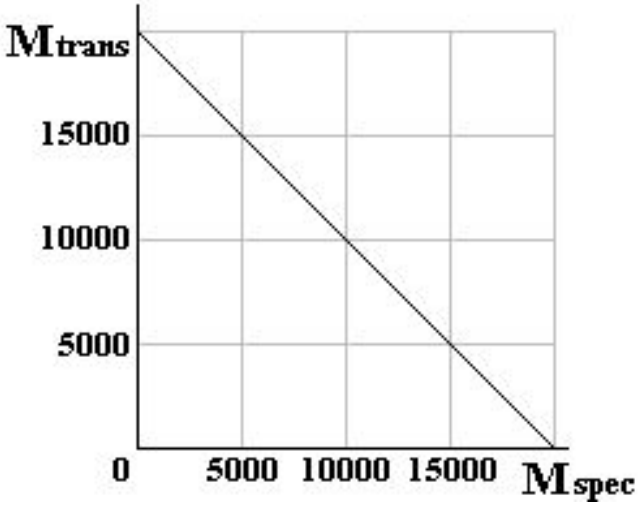

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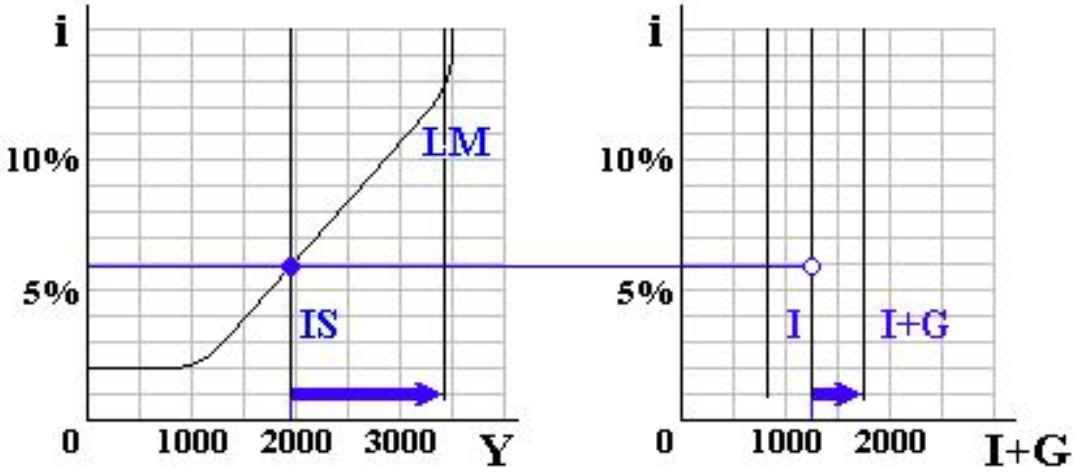

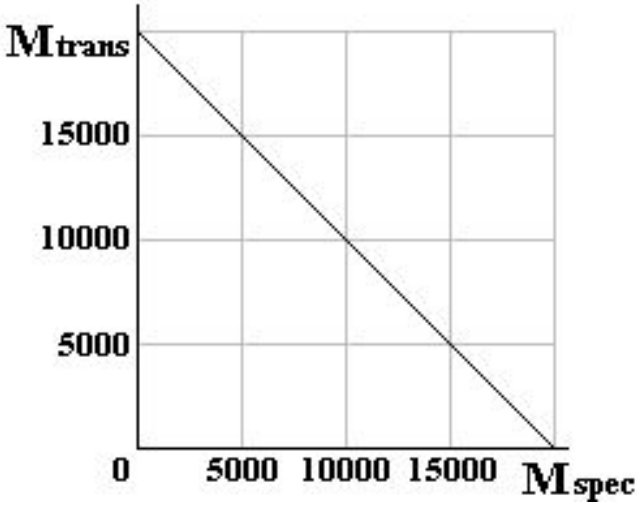

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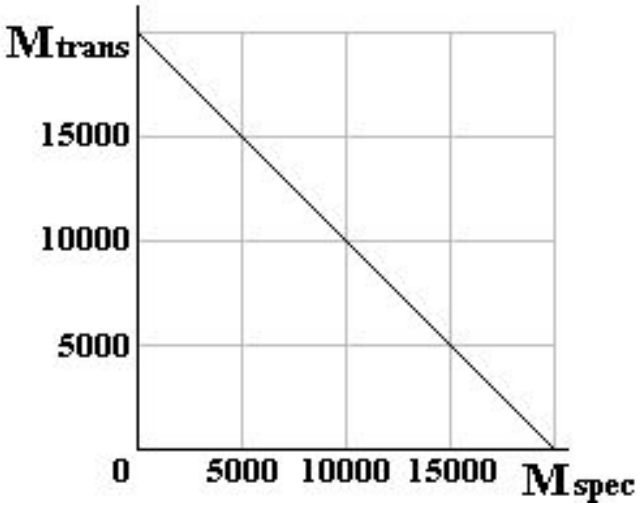

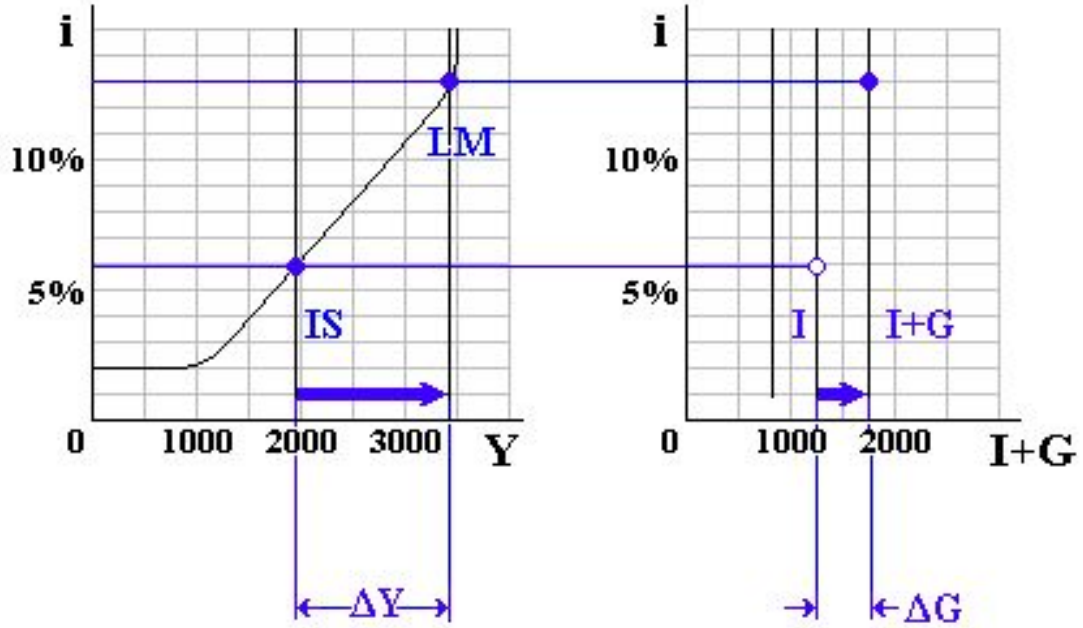

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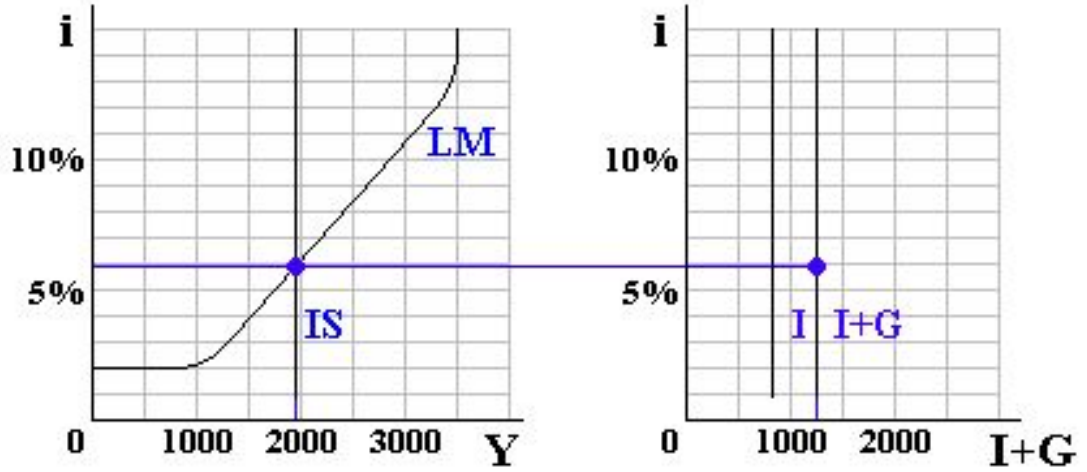

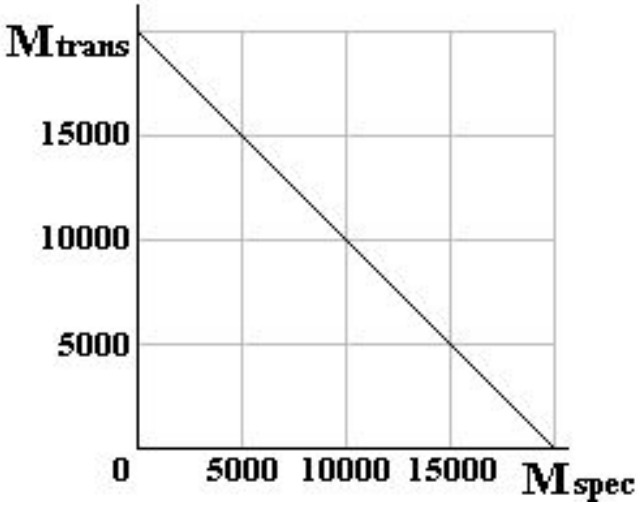

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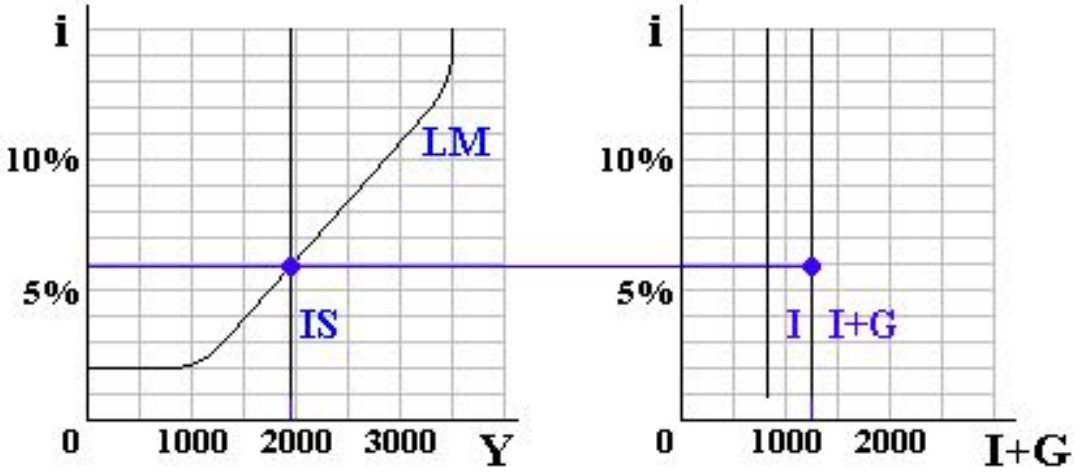

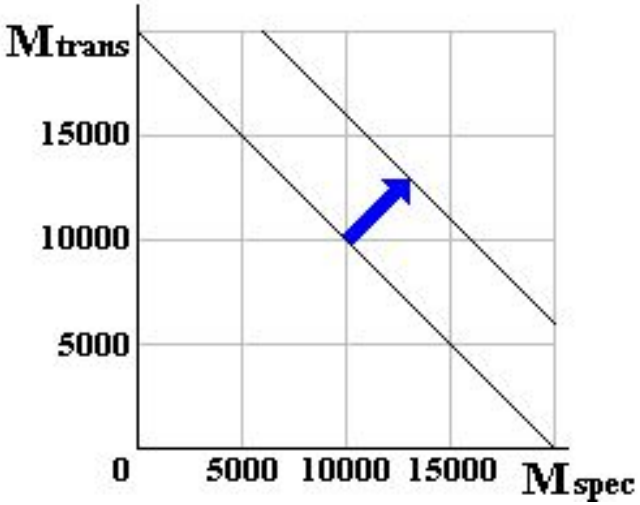

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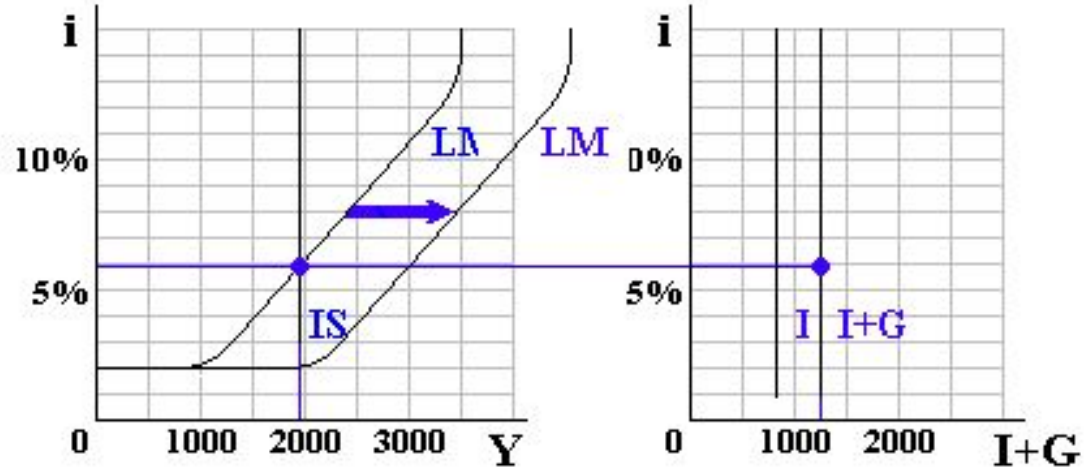

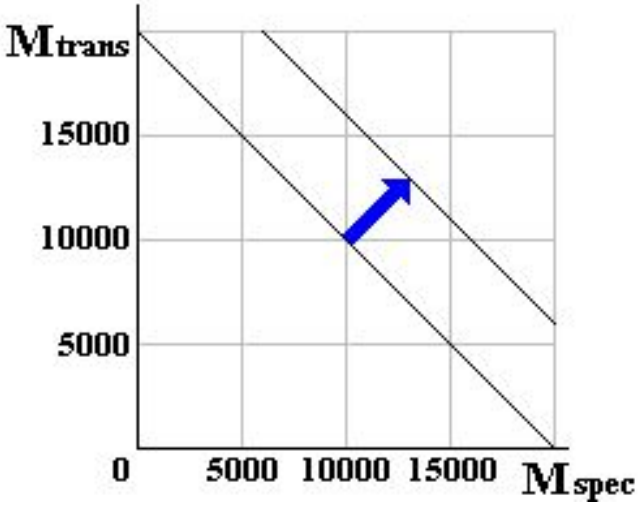

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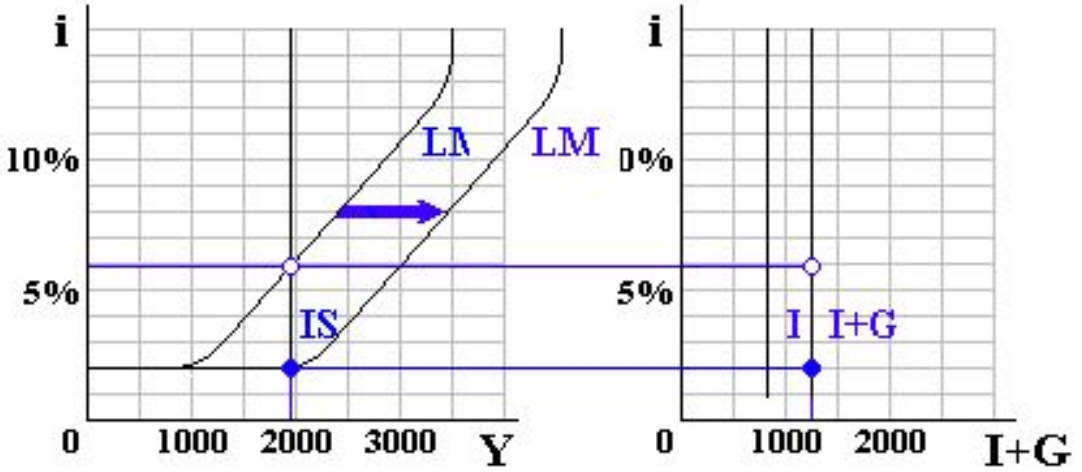

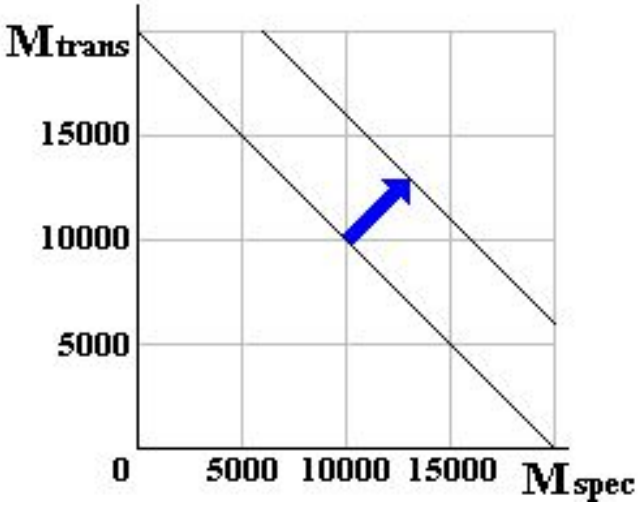

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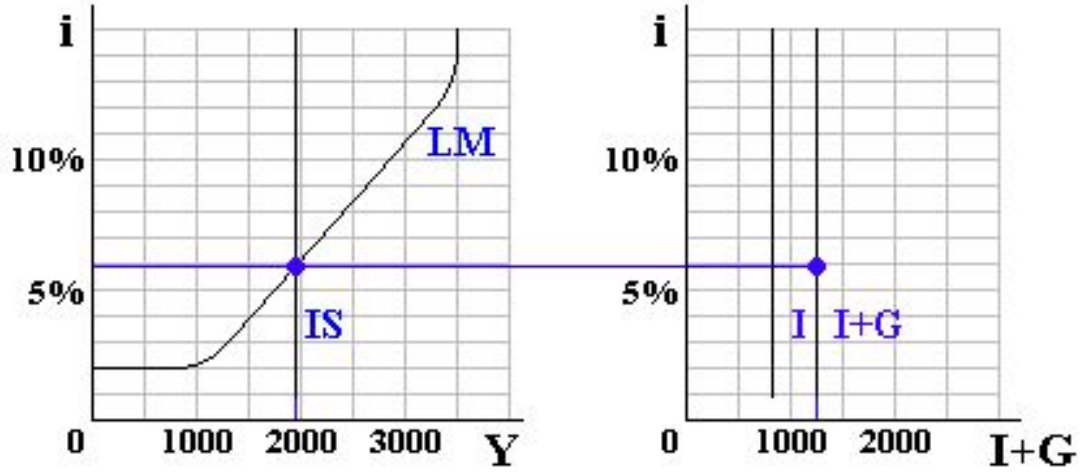

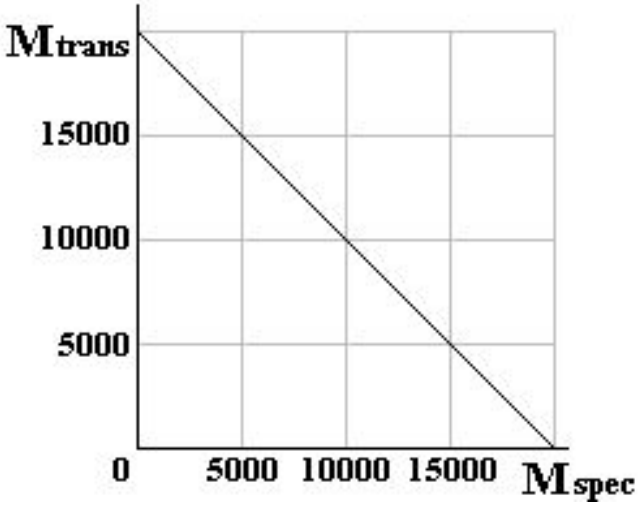

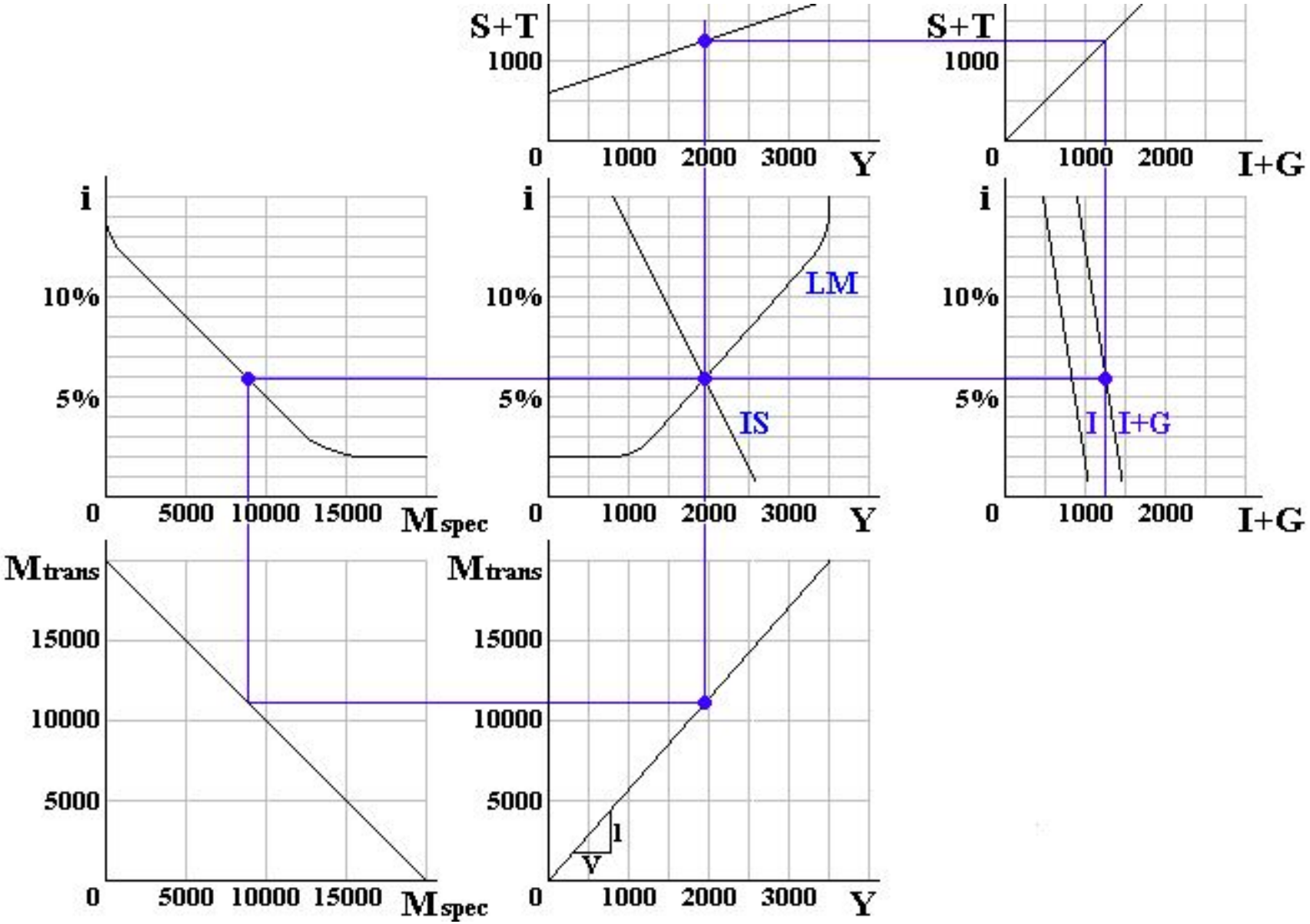
S+T
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2000
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10%
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I
I+G
0
1000
2000
I+G
Mtrans
15000
10000
5000
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5000
10000
15000
Mspec
Mtrans
15000
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V
0
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3000
Y

ISLM analysis builds upon the simple Keynesian Income-Expenditure relationships by adding interest-rate considerations.

Using this analysis, we see that the multiplier effect is sometimes not as great as the simple multipliers imply, owing to a change in the rate of interest and hence a movement along the demand for investment funds.

In a number of applications, however, the simple multipliers do apply.

That is, $\Delta Y = [1/(1 - b)]\ \Delta I$

$\Delta Y = [1/(1 - b)]\ \Delta G$

or $\Delta Y = [1/(1 - b)]\ \Delta E_{NET}$

where ΔE_{NET} is the net change ($\Delta G - \Delta I$) in autonomous expenditures.

Examples of conditions or instances in which the simple Keynesian spending multiplier applies include:

1. An economy mired in the liquidity trap, in which case the interest rate does not change.
2. An economy with a perfectly inelastic demand for investment funds, in which case the changing interest rate has no effect on investment.
3. An instance where fiscal policy is fully accommodated by monetary policy, in which case any movement in the rate of interest is arrested by a suitable adjustment in the supply of money.

Examples of conditions or instances in which the simple Keynesian spending multiplier applies include:

4. An instance where the initial round of spending is pre-adjusted for the expected "crowding out" of investment. This is the application, mentioned above, where the simple multiplier is applied to the net change in autonomous expenditures.

5. An instances where the issue is the extent of the shift of the IS curve in response to a given shift in investment demand or increase in government spending. Of course, the increase in income, **ΔY**, may not be as great as the actual shift in IS, owing the interest-rate effect on investment.

6. An instance where an increase in the money supply lowers the interest rate and stimulates investment. Here, the **ΔY** (associated with a movement along the unshifted IS curve) is related to the **ΔI** (associated with a movement along the unshifted investment demand curve) by the simple Keynesian spending multiplier.

The question "Can I use the simple Keynesian multiplier to calculate the effect of X on income" resolves itself into a sequence of subsidiary questions:

1. Does X affect the interest rate?
   If no, then use the simple Keynesian multiplier.
   If yes, then go on to question 2.

2. Does the change in the interest rate affect investment?
   If no, then use the simple Keynesian multiplier.
   If yes, then go on to question 3.

3. Is the interest-rate-induced change in investment taken into account?
   If yes, then use the simple Keynesian multiplier.

JOHN MAYNARD KEYNES
1883-1946

ISLM ANALYSIS AN EXTENSION OF THE KEYNESIAN FRAMEWORK

ROGER W. GARRISON