

## GARRISON ON KEYNES

EDWARD W. FULLER

*ABSTRACT:* This paper examines Roger W. Garrison's interpretation of John Maynard Keynes. Garrison has given economists a useful way to illustrate Keynes's theory, but there are two fundamental problems with Garrison's interpretation. First, the shape of the Hayekian triangle cannot be fixed in Keynes's theory. Second, Garrison's interpretation contradicts the IS-LM model. The demand constraint is derived from the IS-LM model and the IS-LM demand constraint is used to illustrate Keynes's theory.

*KEYWORDS:* John Maynard Keynes, Roger W. Garrison, IS-LM model, Hayekian triangle, capital-based macroeconomics, Keynesian demand constraint, socialization of investment

*JEL CLASSIFICATION:* E12, E22, E32, E43, E52, P20, B22

### INTRODUCTION

Roger W. Garrison's capital-based framework is an outstanding contribution to macroeconomics. The capital-based framework illustrates the Austrian vision of sustainable and unsustainable growth. Furthermore, Garrison's framework can be used to compare the Austrian theory with the theory of John Maynard Keynes.

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Garrison compares the Austrian theory and Keynes's theory with the Hayekian triangle and the Keynesian demand constraint. Garrison has given economists a useful way to illustrate Keynes's theory, but there are two fundamental problems with Garrison's interpretation. This paper examines Garrison's interpretation of Keynes and suggests how Garrison's framework can be extended.

## GARRISON'S INTERPRETATION OF KEYNES

According to Garrison, the shape of the Hayekian triangle is fixed and cannot change in Keynes's theory.<sup>1</sup> "The triangle can change in size but not in shape." (Garrison, 2001, p. 135). How does Garrison justify that the shape of the Hayekian triangle is fixed for Keynes? Garrison's justification is the last sentence in Chapter 4 of the *General Theory*: "if we can assume that, in a given environment, a given aggregate employment will be distributed in a unique way between different industries, so that  $N_r$  is a function of  $N$ , further simplifications are possible" (Keynes, 1936, p. 45).  $N_r$  is employment in a single firm, industry, or stage of production.  $N$  is employment in the entire economy. Therefore, Keynes makes employment in each stage of production a function of employment in the entire economy. To Garrison, this means that the shape of the Hayekian triangle is fixed: "The structure of capital was assumed fixed, the extent of its actual utilization changing in virtual lockstep with changes in the employment of labor" (Garrison, 2001, p. 18).

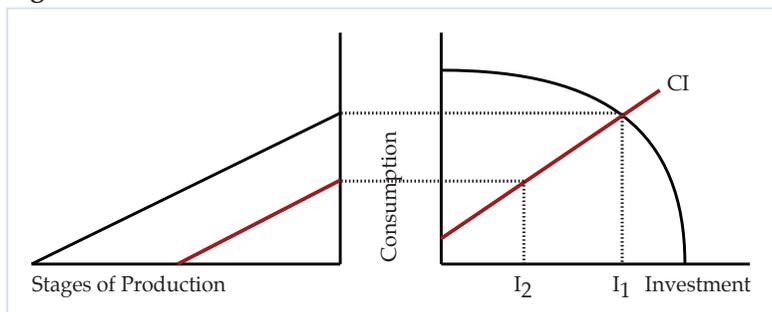
Garrison (2001, p. 136) developed the Keynesian demand constraint to show how consumption changes with investment in Keynes's theory. The Keynesian demand constraint shows that "Investment and consumption are positively related" (Meltzer, 1988, p. 153). Investment and consumption must move in the same direction. If investment increases, then consumption increases too. If investment falls, then consumption also falls. In figure 1, the Consumption-Investment curve (CI curve) is the demand

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<sup>1</sup> Garrison's linking of the Keynesian cross and Hayekian triangle is an important pedagogical innovation. Shackle only alludes to this connection: "If one draws a diagram of what Keynes says about capital in the *Treatise*, there will appear a Hayekian triangle of the stages of production" (Shackle, p. 516).

constraint. The CI curve illustrates the “positively sloped, linear relationship between investment and consumption” (Garrison, 2005, p. 510). The point where the CI curve intersects the production possibilities frontier is the point of full employment. There is unemployment if the economy is located inside the frontier. The demand constraint shows that the economy cannot move along the frontier: “The market economy in [Keynes’s] view is incapable of trading off consumption against investment” (Garrison, 2005, p. 512).

**Figure 1. The Labor-Based Framework**



Keynes (1936, p. 143) argues that the business cycle is caused by fluctuations in the marginal efficiency of capital. Investment is unstable because of the uncertainty underlying investors’ cash flow expectations. A sudden collapse of the marginal efficiency of capital starts the cycle. Figure 1 shows that investment falls from  $I_1$  to  $I_2$ . Investment and consumption must move in the same direction, so the sudden collapse of investment means the amount of consumption also falls. The economy spirals downward along the CI curve. The Hayekian triangle depicts structural fixity. A collapse of the marginal efficiency of capital “reduces the triangle’s size without changing its shape” (Garrison, 2005, p. 512). The Hayekian triangle shrinks, but the shape of the Hayekian triangle is constant. The fixed shape of the Hayekian triangle means that the slope of the Hayekian triangle’s hypotenuse is fixed. The Hayekian triangle shows “the constant slope associated with Keynes’s structure of industry” (Garrison, 2001, p. 135).

## PROBLEMS WITH GARRISON'S INTERPRETATION

There are two fundamental problems with Garrison's interpretation of Keynes. First, the shape of the Hayekian triangle cannot be fixed in Keynes's theory. The slope of the Hayekian triangle's hypotenuse represents the price spread between the stages of production. In the Austrian theory the interest rate is the price spread between the stages of production: "The slope of the hypotenuse of the Hayekian triangle reflects the market-clearing rate of interest" (Garrison, 2001, p. 50). However, the interest rate is not the price spread between the stages of production in Keynes's theory. Keynes made "a rigid analytical distinction between the concepts of the MEC and the rate of interest" (Salerno, p. 44). Keynes accuses Mises and Hayek of "confusing the marginal efficiency of capital with the rate of interest" (Keynes, 1936, p. 193). The marginal efficiency of capital is the price spread between the stages of production in Keynes's theory. For Keynes, the slope of the Hayekian triangle's hypotenuse reflects the marginal efficiency of capital. The hypotenuse becomes flatter when the marginal efficiency of capital falls, and the hypotenuse becomes steeper when the marginal efficiency of capital rises. The marginal efficiency of capital is fixed if the slope of the Hayekian triangle's hypotenuse is fixed.

Garrison holds the shape of the Hayekian triangle constant because of Keynes's simplifying assumptions from the early chapters of the *General Theory*. Garrison argues that the shape of the Hayekian triangle is fixed because Keynes assumes that "income to all factors bears a constant ratio to income to labor.... non-labor income is constrained to move in proportion to labor income" (Garrison, 2001, p. 134). Keynes (1936, p. 55 n.2) does assume that "factor cost bears a constant ratio to wage cost" early in the *General Theory*. Still, it is important to consider whether Keynes maintains this assumption. After all, the justification for the fixed structure assumption is at the beginning of the *General Theory*, but Keynes's business cycle theory and main policy recommendation are at the end of the *General Theory*.

The fixed structure assumption is problematic because Keynes relaxes his simplifying assumptions about labor and factor costs later in the *General Theory*. Keynes only assumes that factor costs bear a constant ratio to wage costs while he is developing the building

blocks of his theory: “we shall assume that the money-wage and other factor costs are constant per unit of labour employed. But this simplification, with which we shall dispense later, is introduced solely to facilitate the exposition” (Keynes, 1936, p. 27). Many interpreters recognize that Keynes’s theory does not depend on his early assumptions, including such diverse authors as Leijonhufvud (1968, p. 161), Patinkin (1976, pp. 101–102), Moggridge (1976, p. 92), Meltzer (1988, p. 164), and Davidson (2007, p. 182). Garrison acknowledges that Keynes does not maintain his early assumptions after Chapter 18: “Keynes presented his arguments on the assumption of fixed prices and wages, and then (after his stocktaking in Chapter 18) he offered qualification that derived from the fact that, to some extent, prices and wages can and do change” (Garrison 2001, p. 133). Keynes presents his business cycle theory in Chapter 22, so Keynes is not operating under the assumption of a fixed structure of production when he presents his business cycle theory. Also, the structure of production is not fixed when Keynes makes his main policy recommendation in Chapter 24. Keynes’s theory of cyclical unemployment, theory of structural unemployment, and main policy recommendation do not depend on structural fixity.

The second fundamental problem with Garrison’s interpretation is that it contradicts the IS-LM model. The IS-LM model is the standard interpretation of Keynes’s theory. To Garrison, the IS-LM model describes “neither the actual workings of the economy nor Keynes’s understanding of them” (Garrison, 2001, p. 125). Since the labor-based framework contradicts the IS-LM model, it is important to examine Keynes’s role in the development of the IS-LM model and whether Keynes accepted the IS-LM model after the *General Theory* was published.

Keynes played a more significant role in the development of the IS-LM model than any other economist. Keynes created the first version of the IS-LM model: “a four-equation IS/LM model first appears in a lecture by Keynes in December 1933” (Dimand, 2010, p. 99). The mid-1934 draft of the *General Theory* has a similar version of the IS-LM model.<sup>2</sup> Keynes also collaborated with the authors of the

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<sup>2</sup> See Rymes (pp. 122–128) and Dimand (2007) for more on Keynes’s 1933 version of the IS-LM model. See Keynes (1973a, pp. 424–456), Patinkin (1976, pp. 73–79), and Meltzer (1988, p. 143–144) for more on the mid-1934 draft of the *General Theory*.

earliest IS-LM papers. David Champernowne (1936) and W. Brian Reddaway (1936) published the first IS-LM papers. Keynes taught and tutored Champernowne and Reddaway at Cambridge, and both attended Keynes's 1933 lectures. Champernowne submitted his paper for publication before the *General Theory* was published. Champernowne admits that his IS-LM paper "was based on Keynes' lectures and supervisions" (quoted in Young, 1987, p. 83). Roy Harrod (1936) published the third IS-LM paper. Young (p. 87) shows that Harrod's version of IS-LM emerged out of a correspondence between Keynes and Harrod during the summer of 1935. Keynes was the first person to present a version of the IS-LM model and he was the key collaborator with the authors of the earliest IS-LM papers.

The *General Theory* does not include a formal version of IS-LM. However, all of the elements of the IS-LM model are in the *General Theory* and "an informal version of the model was there to be found" (Laidler, p. 4). According to Keynes (1936, pp. 246–247), the factors that determine income are the consumption function, the investment demand function, the money demand function, and the quantity of money. These are the factors underlying the IS-LM model. Keynes identifies the elements of the IS-LM model in the *General Theory*, "But Keynes never brought all the elements together" (Hansen, 1953, p. 147). Still, Keynes does suggest how the elements of the IS-LM model can be combined to determine income: "if we have all the facts before us, we shall have enough simultaneous equations to give us a determinate result" (Keynes, 1936, p. 299). Keynes argues that the saving function and investment demand function alone cannot determine the interest rate, "if, however, we introduce the state of liquidity-preference and the quantity of money and these between them tell us that the rate of interest is  $r_2$ , then the whole position becomes determinate" (Keynes, 1936, p. 181). There is no formal version of the IS-LM model in the *General Theory*, but the IS-LM model can be derived from the *General Theory*.

Keynes accepted the IS-LM interpretations after the *General Theory* was published.<sup>3</sup> Keynes approved of Harrod's statement

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<sup>3</sup> Murray N. Rothbard, like Alvin Hansen, views the IS-LM model as the only possible correct interpretation of Keynes's theory: "That Keynes was a Keynesian—of that much derided Keynesian system provided by Hicks, Hansen, Samuelson,

of the IS-LM model: "I like your paper (may I keep the copy you have sent me?) more than I can say. I have found it instructive and illuminating, I really have no criticisms. I think that you have re-orientated the argument beautifully" (Keynes, 1973b, p. 84). After reading the IS-LM paper by James Meade (1937), Keynes told Meade "it was a true representation of the *General Theory*" (quoted in Young, 1987, p. 37). Garrison (1993) is aware that "Keynes himself ... endorsed John R. Hicks's early interpretation of the *General Theory*". Finally, in the *Economic Journal* Keynes endorsed a presentation of the IS-LM model by Oskar Lange (1938): "The analysis which I gave in my *General Theory of Employment* is the same as the 'general theory' explained by Dr. Lange" (Keynes, 1973b, p. 232 n. 1). The claim that the IS-LM model is an incorrect interpretation of Keynes's theory is unjustifiable given the overwhelming evidence that Keynes accepted the IS-LM model after the *General Theory* was published.<sup>4</sup>

Keynes created the first version of the IS-LM model and Keynes endorsed the IS-LM interpretation after the *General Theory* was published. Why did Keynes leave a formal version of the IS-LM model out of the *General Theory*? Keynes did not include a formal version of the IS-LM model in the *General Theory* because "Keynes himself did not truly understand his own analysis" (Samuelson,

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and Modigliani—is the only explanation that makes any sense of Keynesian economics" (Rothbard, 1992, p. 196). Milton Friedman (1997) and Allan Meltzer (1988) use the IS-LM model to explain Keynes's theory because "Keynes accepted the IS-LM interpretation" (Meltzer, 1992, p. 160). Don Patinkin shows that Keynes expressed "consistent approval of the IS-LM interpretation of the *General Theory*" (Patinkin, 1990, p. 214). Even the Post Keynesian economist John E. King admits that "Keynes never once repudiated the IS-LM interpretation of the *General Theory*. On the contrary, he endorsed it warmly" (King, 2003, p. 31).

<sup>4</sup> Interpreters of Keynes who reject the IS-LM interpretation tend to overlook Keynes's endorsements of the early IS-LM papers by Champernowne, Reddaway, Harrod, and Meade. It is a myth that Hicks invented the IS-LM model: "Hicks's failure to acknowledge both Harrod's and Meade's papers in his own, gave the initial impression that he discovered the IS-LM approach independently and alone" (Young, 1987, p. 171). Hicks did not start writing his IS-LM paper until he had read Harrod's and Champernowne's IS-LM papers. Hicks (1937) never mentions Harrod's paper, but Hicks uses Harrod's equation system. Hicks's contribution was the IS-LM diagram. Keynes's endorsement of Lange's paper is especially important because it appeared in print and it appeared after Keynes's famous 1937 article in the *Quarterly Journal of Economics*. Lange (n. 1) acknowledges that his system of equations is similar to Reddaway's, Hicks's, and Harrod's.

1946, p. 188). More specifically, Keynes did not understand that the pure liquidity preference theory is flawed.

Keynes rejected the classical (and loanable funds) theory of the interest rate. Keynes (1936, pp. 180–181) argues that the classical theory cannot determine the interest rate: “Keynes attacked the classical theory of interest on the ground that it is indeterminate.... we cannot know what the rate of interest will be unless we already know the income level. And we cannot know the income level without already knowing the rate of interest” (Hansen, 1953, p. 140). The level of saving cannot be known until the level of income is known, but level of income cannot be known until the interest rate is known. For Keynesians the classical theory cannot determine the interest rate, but the classical theory can be used to derive the IS curve. “The one diagram that we do find in the *General Theory* (p. 180) is logically equivalent to the IS curve” (Patinkin, 1990, p. 224).

Keynes needed to introduce another interest rate theory because he rejected the classical theory. Keynes developed the liquidity preference theory of the interest rate. According to the pure liquidity preference theory, the interest rate is determined by the supply and demand for money. However, the supply and demand for money cannot determine the interest rate. Keynes (1936, p. 199) made the demand for money a function of income, and this left his liquidity preference theory indeterminate: “Keynes did not, however, see that his own interest theory was equally indeterminate” (Hansen, 1953, p. 147). The demand for money cannot be known until the level of income is known, but the level of income cannot be known until the interest rate is known. On Keynes’s own grounds the pure liquidity preference theory is indeterminate. For Keynesians the liquidity preference theory can be used to derive the LM curve, but the liquidity preference theory cannot determine the interest rate. Keynes did not include a formal version of the IS-LM model in the *General Theory* because he did not realize that the pure liquidity preference theory is indeterminate.

Keynes expressed a purely monetary theory of the interest rate in the *General Theory*. He denied that saving and investment play any role in determining the interest rate: “Keynes gives the misleading impression that the demand for and supply of money determine the rate of interest independently of the saving and investment schedules” (Meltzer, 1988, p. 149). Keynes forgot

that he made money demand a function of income. He did not realize that the pure liquidity preference theory is indeterminate. "Keynes had failed in his attempt to fashion a 'purely monetary' theory of interest ... he had been forced to recant his revolutionary creed" (Fletcher, 1987, p. 124). Keynes could recant by admitting that one of his elements was wrong, or Keynes could recant by reverting to the IS-LM model. Keynes recanted by returning to the IS-LM model: "by supporting Hicks's interpretation of his theory, Keynes went a good way back towards the Robertsonian view that productivity and thrift help determine the rate of interest" (Presley, 1979, pp. 185–186). By accepting the IS-LM model after the *General Theory* was published, Keynes admitted that saving and investment influence the interest rate.

The labor-based framework contradicts the IS-LM model.<sup>5</sup> The labor-based framework ignores how the interest rate changes when investment changes. For example, a collapse of investment reduces the interest rate in the IS-LM model. In contrast, a collapse of investment does not reduce the interest rate in the labor-based framework. For Garrison, after investment collapses "the old rate of interest still clears the market for loanable funds.... the rate of interest remains unchanged" (Garrison, 2001, pp. 146–147). This is a problematic. Keynes made the demand for money a function of income. Lower income must reduce the demand for money, and hence reduce the interest rate. Similarly, the labor-based framework ignores how the interest rate changes when saving changes. The interest rate falls when saving increases in the IS-LM interpretation, but the interest rate does not fall when saving increases in the labor-based framework. After saving increases "The initial interest rate is, once again, the market-clearing rate" (Garrison, 2001, p. 162). The labor-based framework is problematic because it contradicts the IS-LM model when saving or investment changes.

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<sup>5</sup> The labor-based framework does not contradict the IS-LM model if the economy is in a liquidity trap. In this sense, Garrison might be grouped with interpreters like Friedman who "put great emphasis on highly elastic liquidity preference" (Friedman, 1972, p. 928). However, the term 'liquidity trap' does not appear in *Time and Money* and Keynes (1936, p. 207) did not believe that the economy was usually in a liquidity trap.

## CYCLICAL AND SECULAR UNEMPLOYMENT

Keynes accepted the IS-LM interpretation, so the demand constraint must be derived from the IS-LM model. "It is possible to derive the demand constraint for the IS-LM relationship by shifting the investment schedule and tracking the equilibrium values of investment and consumption" (Garrison, 1995, n. 2). The IS-LM demand constraint can be derived with equation 1 and equation 2.<sup>6</sup> In figure 2, the upward-sloping CI curve summarizes the relationship between consumption and investment. The CI curve is the IS-LM demand constraint.

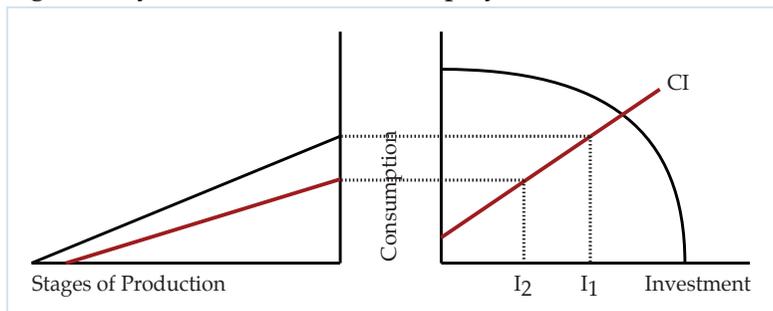
$$(1) \quad \text{Consumption} = \frac{a(de+f)+b(cf+dM)}{f(1-b)+de}$$

$$(2) \quad \text{Investment} = \frac{(1-b)(cf+dM)-ade}{f(1-b)+de}$$

In terms of the IS-LM model, Keynes's main concern is autonomous investment ( $c$ ). According to Keynes, "There is no reason to suppose that there is 'an invisible hand', an automatic control in the economic system which ensures of itself that the amount of active investment shall be continuously of the right proportion" (Keynes, 1982, pp. 386–387). Keynes believed that autonomous investment is unstable and chronically low: "The weakness of the inducement to invest has been at all times the key to the economic problem" (Keynes, 1936, pp. 347–348). A collapse of the marginal efficiency of capital means autonomous investment collapses. In figure 2, the amount of investment falls from  $I_1$  to  $I_2$ . The amount of consumption also falls because "consumption and investment always move in the same direction" (Garrison, 1995, n. 2). The economy spirals downward along the CI curve.

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<sup>6</sup> Where  $a$  is autonomous consumption,  $b$  is the marginal propensity to consume,  $c$  is autonomous investment,  $d$  is the interest sensitivity of investment,  $e$  the is sensitivity of money demand to income,  $f$  is the sensitivity of money demand to the interest rate, and  $M$  is the real money supply. Keynes main concern was autonomous investment ( $c$ ).

**Figure 2. Cyclical and Secular Unemployment**

A sudden collapse of autonomous investment reduces the size of the Hayekian triangle. The horizontal leg and the vertical leg both shrink. In the labor-based framework the shape of the Hayekian triangle does not change, but it is necessary to eliminate the fixed structure assumption. For Keynes, the slope of the hypotenuse represents the marginal efficiency of capital. A collapse of the marginal efficiency of capital means there is a drop in the price spread between the stages of production. The Hayekian triangle changes in size and shape. The Hayekian triangle's hypotenuse becomes flatter.<sup>7</sup>

The business cycle is not the main focus of Keynes's theory. Keynes's primary concern is secular unemployment, not cyclical unemployment. "The central thesis of the *General Theory* is that a capitalist economy operating on the principles of laissez-faire fluctuates around a stable equilibrium at which there is less than full use of resources" (Meltzer, 1988, p. 123). Keynes's theory is a theory of chronic stagnation. To Keynes the free market economy operates "in a chronic condition of sub-normal activity" (Keynes, 1936, p. 249). According to Keynes, "We oscillate ... round an intermediate

<sup>7</sup> To Keynes, the consumer goods industries fluctuate more than the capital goods industries. This feature of Keynes's theory is inconsistent with the observation that the "capital-goods industries fluctuate more widely than do the consumer-goods industries" (Rothbard, 1963, p. 9). Robertson argued that "More pronounced cycles will take place in construction good industries with consumer good industries being less affected" (Presley, p. 19). Hansen recognized that "the most salient characteristic of cyclical movements of business is the fluctuation in the production of capital goods" (Hansen and Tout, p. 119).

position appreciably below full employment” (Keynes, 1936, p. 254). The economy is normally located inside the frontier because autonomous investment is chronically low. Keynes’s business cycle theory is actually a corollary of the stagnation thesis. Figure 2 shows that “oscillations of the economy play themselves out inside the PPF” (Garrison, 2001, p. 177). When autonomous investment collapses, the economy spirals down from a point inside the frontier to a point even deeper inside the frontier. The free market economy fluctuates inside the frontier because the level of investment is unstable and chronically lower than full investment.

In Austrian terminology, Keynes’s stagnation thesis means that the Hayekian triangle is chronically smaller than the social optimum. For Keynes, the utilization of the capital stock is normally suboptimal in a free market economy. The suboptimal size and shape of the Hayekian triangle represents the underutilization of society’s productive capacity. The amount of goods flowing from the structure of production is persistently below the amount that society is capable of producing. The economy is capable of producing more goods, but labor and capital are underworked. The Hayekian triangle could be larger, but some of society’s labor and capital are idle because investment is chronically low. To Keynes, the size and shape of the Hayekian triangle is chronically suboptimal in a free market economy.

## KEYNES’S POLICY RECOMMENDATIONS

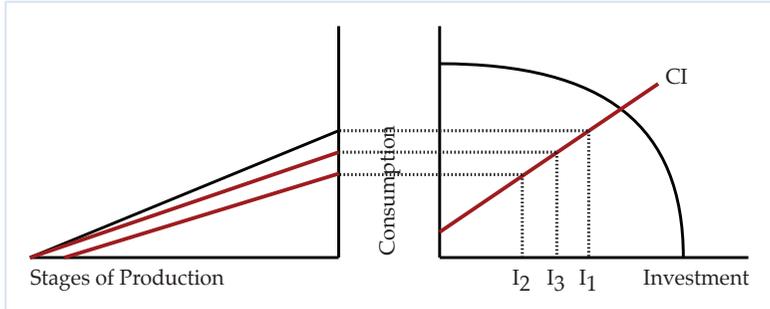
According to Keynes, the fundamental flaw with the free market economy is chronically low investment. Unemployment is chronically high because investment is chronically low. Therefore, Keynes’s most important policy goal is increasing investment. “As for the preferred method of achieving full employment, Keynes consistently maintained his view of the 1930s that it was desirable to concentrate on the stimulation of investment” (Moggridge, 1976, p. 132). To Keynes there are two practicable ways the government can increase the amount of investment: “investment is stimulated either by a *raising* of the schedule of the marginal efficiency or by a *lowering* of the rate of interest” (Keynes, 1936, p. 193). In terms of the IS-LM model, government can increase the amount of investment by increasing autonomous investment or increasing the money supply.

Keynes's main policy recommendation is socializing investment. Keynes believed that socializing investment is the only way to achieve permanent full employment: "a somewhat comprehensive socialisation of investment will prove the *only* means of securing an approximation of full employment" (Keynes, 1936, p. 378).<sup>8</sup> Uncertainty about the future cash flows from investment projects causes chronically low autonomous investment, so "the duty of ordering the current volume of investment cannot safely be left in private hands" (Keynes, 1936, p. 320). By socializing investment, the government can push the economy up the demand constraint to the frontier. Furthermore, the government can ensure that the economy stays on the frontier. Keynes recommended a permanent program of managing investment to pin the economy to the frontier: "The object of Keynesian policy, of course, is to drive the economy to some point on the frontier and keep it there" (Garrison, 2001, p. 44). The government can make sure that the size and shape of the Hayekian triangle always corresponds to the social optimum. Socializing investment is the only way to guarantee that the amount of consumer goods flowing from the structure of production always equals the maximum amount that society is capable of producing.

Garrison (2001, p. 154) also uses the labor-based framework to explain Keynes's view of monetary policy. Monetary policy can increase the amount of investment in Keynes's theory: "An increase in the supply of money will necessarily raise total income ... Admittedly it follows from this theory that you may be able to increase employment by direct inflation" (Hicks, 1937, pp. 150–151). Increasing the money supply increases the amount of investment by reducing the interest rate. In Figure 3, an increase in the money supply increases the amount of investment, from  $I_2$  to  $I_3$ .

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<sup>8</sup> Keynes described himself as a liberal socialist: "By his own admission, Keynes lay at the 'liberal socialist' end of the broad spectrum of political and social thought that runs to Ludwig von Mises and Hayek and successors such as Milton Friedman at the other" (Moggridge, 1976, p. 38). According to O'Donnell (1999, p. 165), "It is *clear*, explicit and unambiguous; he used the term socialism to characterise his own views". For different views on Keynes's recommendation of socializing investment see Garrison (2001, p.180–187), Meltzer (1988, pp. 189–192), Rothbard (1992, p. 191–192), Salerno (1992, pp. 48–58), Patinkin (1976, p. 136–137), Tobin (1983, p. 8), Fletcher (pp. 173–178), and Davidson (2007, pp. 65–68). For more on Keynes's political philosophy, see O'Donnell, Brunner, Lambert, Dostaler, and Raico.

**Figure 3. Monetary Policy in Keynes's Theory**

However, it is not possible to totally offset the collapse of the marginal efficiency of capital by reducing the interest rate: “fluctuations in the market estimation of the marginal efficiency of different types of capital ... will be too great to be offset by any practicable changes in the rate of interest” (Keynes, 1936, p. 164). Increasing the money supply can push the economy up the demand constraint, but it cannot restore the amount of investment to its original level. Figure 3 shows that increasing the money supply raises the amount of investment from  $I_2$  to  $I_3$ , but it does not raise the amount of investment back to  $I_1$ . For Keynes monetary policy plays a secondary role: “Full employment, then, in all likelihood, cannot be re-established by monetary policy alone.... monetary policy is the best solution to a secondary problem” (Garrison, 2001, pp. 154–155). Monetary policy has benefits, but monetary policy plays a secondary role for Keynes because it cannot totally counteract the business cycle.

Increasing the money supply causes the Hayekian triangle to grow in Keynes's conception of the Hayekian triangle. However, increasing the money supply does not change the shape of the Hayekian triangle. “Keynes distinguishes between the schedule of the marginal efficiency of capital and the prevailing rate of interest” (Meltzer, 1988, p. 128). The marginal efficiency of capital is completely determined by investors' cash flow expectations. Increasing the money supply does not change investors' cash flow expectations, so the slope of the hypotenuse does not change. Increasing the money supply cannot restore the Hayekian triangle to its original size and shape after a collapse of the marginal

efficiency of capital. The marginal efficiency of capital, not the fixed structure assumption, rules out the market mechanisms featured in the Austrian theory.<sup>9</sup>

More importantly, monetary policy cannot solve the problem of chronic stagnation. Keynes's primary policy objective, full investment, cannot be achieved with monetary policy alone. Increasing the money supply cannot solve the structural problem of chronically low autonomous investment: "no practicable reduction of the rate of interest would be great enough to encourage firms to increase their investments sufficient to generate full employment" (Patinkin, 1976, p. 137). Monetary policy can push the economy up the demand constraint, but monetary policy cannot push the economy to the frontier. Moreover, monetary policy cannot guarantee that the economy is permanently located on the frontier. Monetary policy can increase the size of the Hayekian triangle, but monetary policy cannot ensure that the size and shape of the Hayekian triangle always corresponds to the social optimum.

Keynes's key point is that the fundamental problem with the free market economy is chronically low autonomous investment. Monetary policy cannot increase autonomous investment, so monetary policy cannot solve the fundamental problem with the free market economy. According to Keynes (quoted in Meltzer, 1988, p. 131), "It is not quite correct that I attach primary importance to the rate of interest. What I attach primary importance to is the scale of investment and [I] am interested in the low interest rate as one of the elements furthering this. But I should regard state intervention to encourage investment as probably a more important factor than low rates of interest". Monetary policy can only increase the amount of investment indirectly by reducing the interest rate. Keynes's main policy recommendation is to directly increase autonomous investment. Full investment is Keynes's main

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<sup>9</sup> For the Austrians, an increase in the supply of loans by fractional reserve banks affects the shape of the Hayekian triangle. For Keynes, the shape of the Hayekian triangle does not change when fractional reserve banks increase the supply of loans. This feature of Keynes's theory is significant because it rules out the Austrian Business Cycle Theory. "The most important error Keynes commits is to consider investment determined by the marginal efficiency of capital" (Huerta de Soto, 1998, p. 555). See Fuller (2013) for more on the marginal efficiency of capital.

priority, and socializing investment is the only way to achieve full investment. Socializing investment is the only permanent solution to Keynes's stagnation thesis.

## CONCLUSION

Roger W. Garrison has given economists a tremendously useful way to illustrate Keynes's theory. For illustrating Keynes's theory, the demand constraint diagram is superior to the Keynesian cross. The demand constraint diagram is simpler than the Keynesian cross. Unlike the Keynesian cross, the demand constraint diagram isolates investment. By isolating investment, the demand constraint diagram highlights the key issue of chronically low investment in Keynes's theory. However, Garrison's demand constraint is incomplete. The demand constraint must be derived from the IS-LM model because Keynes accepted the IS-LM interpretation of his theory. Following Garrison, the IS-LM demand constraint is an elegant way to illustrate Keynes's theory.

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