An alternative for analysing and teaching monetary policy based on interest rate rules: the institutional perspectives from Myrdal's *Monetary Equilibrium*

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Abstract: In this article, the author reviews the analysis developed by Gunnar Myrdal (1898–1987) in his *Monetary Equilibrium* (1932, 1939, 1965). The author argues that his analysis of monetary rules based on interest rates is relevant for the current policy and pedagogy, not only because the author offers a workable framework, but for his incorporation of the institutional context, usually ignored by other pedagogical strategies teaching monetary rules. Thus, this article is a prelude to a more complete approach to monetary policy analysis.

Keywords: monetary policy; Myrdal; institutional economics.

Biographical notes:

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1 Introduction

Monetary policy based on interest rates rules has become a *staple* in the global economic landscape. Exploring the efficiency of such rules using a more institutional and evolutionary approach has become an urgent and relevant task for macroeconomic education, due to the recent crisis with the attendant challenges to teaching the *New Consensus Macroeconomic Model* (Fontana and Setterfield, 2009; Reardon, 2009).

The historical background of an analytical framework for developing a monetary policy based on interest rates rules can been traced to the contributions of the Swedish

economist Knut Wicksell (Jonung, 1979; De Aguirre, 2000b; Woodford, 2003; Weise, 2007; Boianovsky and Trautwein, 2006). In this article, I argue that Myrdal's (1932, 1939, 1965) extension of Wicksell's contributions in his *Monetary Equilibrium* (hereafter referred to as ME) enables a better understanding of contemporary issues in monetary theory and policy. Particularly, its relevance comes from Myrdal's framing of the mechanics of current monetary policy rules in an institutional and wider context than conventional monetary policy models. In addition, his work is presented in a manner that may usefully complement current efforts in teaching the *New Consensus Macroeconomic Model*. Central Bank policy makers, monetary theory and policy professors, and students are encouraged to read Myrdal's *ME*. In addition, the book is a valuable reading tool for the general public interested in monitoring policy makers and understanding the nuts and bolts of current monetary policy. Furthermore, since ME was written as a immanent critique of Wicksell's *Interest and Prices*, where most of the *New Consensus Macroeconomic Model* originates, Myrdal's book offers strategies to address some of the challenges of current monetary policy models.

This is because Myrdal develops his analysis in a dynamic, saving/investment (*ex post*/*ex ante*) framework which evaluates its feasibility in non-stationary states with uncertainty and other characteristics, which, of course comports nicely with an out-of-equilibrium dynamic analysis. Furthermore, the Myrdalian analysis in ME includes institutional facts involving the context and determination of monetary policies based on interest rates rules. Myrdal offered a reformulation of the relevant price index and he was able to identify an 'indifference field' where different credit conditions, term structure of interest rates and institutional facts give the same ME (price stabilisation) but with different implications for long-term economic sustainability and income distribution.

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In order to develop this argument, the analytical and historical background of the transformation of ME from Wicksell into Myrdal is presented in Section 2. In Section 3, the foundation blocks of Myrdal'*s ME* model are presented. In Section 4, some lessons of ME in Myrdal's perspective are identified and Section 5 concludes with reasons to read Myrdal's ME.

2   Analytical background: Wicksell's *prices and interest rates*

In this section, we will explain "The new beginnings of monetary theory that start with Wicksell" (ME, p.10). Here, the normative principle of the Wicksellian hypothesis is the desirability of price stability which is analysed with the analytical model of a credit-based economy, rather than unconvertible money under the gold standard. Thus, is it possible to stabilise prices in a credit-based economy? What would be the most efficient policy instrument? How should a Central Bank do this?

First, one must remember that the answers to those questions were explored, during Wicksell's time, when the 'traditional' answer (based on the Money Quantity Theory) was the regulation of the money base in an economy based on convertible money. Nevertheless, in a credit-based economy, such a policy rule does not apply[1] and a new policy rule must be developed. When Wicksell (1898) wrote *Interest Rates and Prices* this situation was not only a theoretical problem, but a practical one as well. Wicksell (1898, Chapter 2) described events where a change in prices was observed without a corresponding change in the money base and *vice versa*.

The monetary rule, according to Wicksell, should also have a practical implementation at times when a national currency loses its convertibility under the gold standard. That rule should be substituted by others allowing price stability without convertible money. A monetary rule based on money supply does not appear effective in a financial economy based on credit and flexible exchange rates. Wicksell's theory, or his hypothesis as he preferred to call it, used the transformation in monetary and banking institutions that was occurring during the 19th century as its departure point. *Fiduciary* money was becoming a current fact [De Aguirre, (2000a), p.28].

Wicksell related the desirable policy objective of price stability to undesirable effects on income distribution (Wicksell, 1898, Chapter 1) and later to the stabilisation of business cycles.

Wicksell, in developing his hypothesis, borrowed the concept of macroeconomic equilibrium[2] from the Austrian School of Economics (in particular from Böhm-Bawerk) and adapted it to the context of a credit-based economy with the policy objective of price stability. He advanced a monetary rule that policy makers can follow, identified as the equalisation of money and the natural interest rates.

In this regard, the central idea of Wicksell's IP is that ME corresponds to where the 'normal interest rate' must equal the marginal technical productivity of real capital (natural rate of interest), guaranteeing a stable price level. In the Wicksellian explanation, both interest rates play a fundamental role. The normal/money rate is determined in the credit and money markets and it is equal to the cost of a unit of capital disposal during a unit period (Wicksell, 1898). According to the central theory of prices, Böhm-Bawerk stated that the 'natural or real' interest rate is one in which the rate is determined by the supply and demand of real capital as it was in specie, without monetary intervention (Wicksell, 1898).[3]

Money is not a veil in a credit-based economy: It is not goods which are lent, but rather money. Then, capital represented by real goods is sold using money. Therefore, there is no need for the monetary rate to coincide with the 'natural or real' rate, "The supply of real capital is limited by purely physical conditions, while the supply of money is, in theory, unlimited and even in practice it is held within fairly elastic boundaries" [De Aguirre, (2000a), p.13]. Even more, in this Wicksellian world, "The persistence of any deviation between the *two interest rates* will lead to a change in commodity prices, and that this change will continue progressively" [De Aguirre, (Ibid), p.13].

The entrepreneur plays a central role in the Wicksellian process by comparing the *monetary* and the *natural* interest rate when planning productive activities. If the natural rate of interest is higher than the money rate, the entrepreneur will have an unexpected increase in profit at the end of the productive period. This situation will induce him/her to increase his/her investments (larger roundabout process of production). Given the stationary state of the economy, this result will be reflected in an increase in the general level of prices, which causes the entrepreneur to register another unexpected increase in profits. When the natural rate of interest is lower than the money rate, the entrepreneur will have an unexpected loss, his/her real capital value will decrease and he/she will be encouraged to reduce investments and capital expenses. Thus, there will be decrease in price level.[4]

For Wicksell the foundation of price disequilibrium stems from an imbalance between the nominal money supply and demand for goods. Myrdal wrote:

> "Any monetary theory of value which wants to deserve the name must, therefore, be able to show how and why the monetary or pecuniary demand for commodities can exceed the supply of commodities under given circumstances, or, *vice versa*, can fall short of it." (ME, p.21)

In the Wicksellian economic model, the inequality between money and the natural interest rate translates to an increase in the generalised demand for goods due to a change in the *expected profit*.

An important digression focuses on the length of time that price 'disequilibrium' can be sustained. Wicksell pointed out [in the long run] that,

> "It is, however, sufficiently certain that sooner or later the money rate will move into coincidence with the natural rate of interest on capital. In other words, the magnitude of the money rate is ultimately determined only by the relative excess or scarcity of real capital goods. . .with the monetary system of actual fact, the rate on loans is sooner or later drawn into line with the current level of the natural rate on capital." [Wicksell, (1898), p.13]

In terms of a practical policy, given the difficulties identifying the natural rate of interest, Wicksell found that in the end that if his hypothesis is correct, monetary authorities, just by observing the rise or fall of general level of prices, will cause the decrease or increase of the monetary interest rate [Wicksell (1898, p.189ff), as quoted in Myrdal (ME, p.129, footnote 5).

Up to this point, Wicksell's policies have been reviewed, but his analysis of the topic in *Political Economy* (LPE) published between 1901 and 1906 is interesting. While some economists, such as Laidler (1991), considered both works as a continuation/extension of each other, others including Uhr (1960) and De Aguirre (2000a) observed a difference. Specifically, there is a debate if equality between the amount of savings and investment should be included as a ME condition. In my view, the main difference is that, in Wicksell's IP, the analysis is of a credit-based economy in a stationary state (with no uncertainty) and, in LPE, it is based on an economy in a non-stationary state with limited uncertainty.

It may be recalled that Wicksell in IP, framed his analysis of a model of a stationary-state economy (without uncertainty). In principle, in this type of economy, equality in the amount of investment and savings is 'warranted' by definition. Households save whatever they are willing to spend in the future, not more or less, because there is no uncertainty regarding what they are sure to spend in the future. On the other hand, (real capital) investors and firms plan to invest the resources made available through savings.

In Vol. 2 of LPE, Wicksell extended his analysis of a non-stationary economy to one with unexpected variations in planned savings and investment. In this context, of course, the analysis of the relationship between interest rates and price dynamics is more 'appealing' and more direct. However, LPE will not be reviewed here since the objective of this article is a study of Myrdal's ME. In this regard, Myrdal pointed out that "in his *Lectures,* his presentation is more direct and realistic, but very short and not as thorough as in the older work" (ME, p.20). Specifically, Myrdal identified Wicksellian ME where the 'normal rate of interest' must "be equal to the marginal technical productivity of real capital (natural rate of interest); equate the supply of and the demand for savings; and finally, guarantee a stable price level, primarily of consumption goods" (ME, pp.37–38). As Myrdal wrote, "Wicksell assumes that these three criteria for the normal rate of interest are equivalent, i.e., never mutually inconsistent" (ME, p.38). In fact, the central

feature of the Wicksellian heritage taken by Myrdal was to identify ME through these three conditions.

Regarding the last equilibrium condition, Lindahl (1939, 1970), among other economists, found the Wicksellian hypothesis of an economy in disequilibrium interesting. Nonetheless, he developed his hypothesis using a different perspective. In particular, Lindahl emphasised ME as a reflection of consumption goods prices, but Wicksell referred those differences as a reflection of general price levels. According to Wicksell (1898, p.138),

> "It obviously follows that. . . the fall in the discount rate . . . must . . . exert a depressing influence on long-term interest rates, provide a stimulus to trade and production, and alter the relationship between the supply and demand of goods and productive services in such a way to necessarily to bring about a rise in *all* [my emphasis] prices."

Here, it can be observed that the difference between natural and money interest rates is reflected in prices in general due to a difference between the general demand and supply of goods.

This difference is not essential for this paper. However, it should be noted that Myrdal adopted Lindahl redefinition of equilibrium condition number 3. Since this article is a review of ME, this change is not essential to this topic; nevertheless, it might be relevant for further research to analyse the difference/extension between Wicksell's analysis on monetary rules based on interest rates in *IP* and LPE to better understand his contribution to economic theory.

At this point, it is important to note that since the *New Consensus Macroeconomic Model* has its theoretical origin in Wicksell's IP, the model carries some of the same limitations identified by Myrdal. Some of these limitations are foundational rather than empirical, and they include the difficulties of justifying the concept of the natural interest rate in theoretical terms.

3 Historical background: the Swedish economy in the 1930s

The analysis of monetary rules for a credit-based economy with unconvertible currency remained not only a theoretical model, but was also required for monetary policy analysis after WWI, when Sweden began to abandon the gold standard, on and off during the 1920s, and then again in the beginning of the 1930s. In the early 1930s, central banks needed to find reliable monetary rules to control and maintain price stabilisation. In Sweden, two factors convened to develop new monetary rules: Wicksell's hypothesis, which heavily influenced the minds of younger Swedish economists, and a Central Bank which acknowledged the opinion of those economists.

According to Berg and Jonung (1998), when Sweden left the gold standard in the fall of 1931, the government, under the influence of economists, introduced a monetary programme of domestic price level stabilisation. It was launched at the onset of the depression to arrest the fall in prices as well as to mitigate widespread fears of rising inflation. The monetary declaration of 1931 consisted of one sentence, "The domestic purchasing [power] of the krona should be preserved using all means available".[5] This simple sentence evolved over several stages into a full monetary programme before it was finally approved by the Swedish Parliament in 1932. It is important to note that the

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Swedish experience of the 1930s anticipated much of the present discussion of monetary policy for central banks with price stability as their primary objective.

Myrdal acknowledged the relevance of this economic policy, comparing Sweden with Great Britain where "the British pound had turned into a paper currency "without any declaration of a monetary programme [sic] whatsoever" [quoted in Carlson, (2011), p.35]. Sweden, however, had "done what Britain should have done" and the constant price target level constituted "the best possible monetary programme [sic] at the moment". In that historical circumstance, Myrdal offered his contribution of evaluating how practical and recommendable the Wicksellian monetary rule was to obtain price stability as well as output stabilisation, employment included. In the theoretical field, he continued the analysis of monetary rules in a non-stationary economy and introduced the development of Wicksellian hypothesis. Particularly, Myrdal pointed out that, "This essay bears the mark of the time [spring of 1932] at which it was written and the background of its author. It belongs among the attempts made during the early years of the great depression to reach a basis for a deeper and more comprehensive monetary theory" (ME, p.5).

Just for the record, the original Swedish text of Myrdal's ME was published in *Ekonomisk Tidskrift*, 1931. A German translation can be found in a collection of essays edited by Hayek (1933). Myrdal noted,

> "The three introductory chapters were added to the German edition and certain sections containing contributions toward the settlement of purely Swedish controversies were omitted. As now [1939] published in English, the essay is a translation of the German text without consequential modifications." (ME, p.6)

For a detailed comparison between those three versions, see Palander (1953).

4   The Wicksell-Myrdal connection

In order to evaluate the pertinence of monetary rules, Myrdal in ME began with a review of the Wicksellian hypothesis, "For decades Knut Wicksell's monetary theory has been the centre of discussion in Sweden. Rather than pioneer with a wholly new approach, it was quite natural for the present author [Myrdal] to project his own ideas within Wicksell's old framework" (ME, p.5).

Specifically, Myrdal adopted the immanent methodological approach which he explained,

> "My analysis will be of an *immanent* nature in so far as I shall take over in the beginning the fundamental features of Wicksell's monetary theory and shall develop my own arguments under the assumption of the fundamental correctness of his explanation. The Wicksellian formulation, we shall find, will need modification in several directions. . . The reasons for choosing this immanent method for the analysis and for presenting my own results as a development of Wicksell's theory instead of arranging my exposition more directly and systematically according to positive theoretical principles, are, first, my belief, that particularly in the present state of economic theory we should clearly trace the lines of tradition – positive as well as negative – from the older generations of economists in order to prevent our literature from falling any more than necessary into Babylonic barbarism."(ME, p.31).

Myrdal also valued Wicksell's analysis of monetary policy in a credit-based economy instead of in a fixed amount of payment forms, which was usual at the time. He wrote, "Another type of monetary analysis is arising nowadays which no longer places the main emphasis on the amount of means of payment. To a certain degree this is a new phenomenon" (ME, p.5). Economic analysis now should be based in this new 'type' of economy. However, Myrdal not only acknowledged the advantage of the Wicksell hypothesis but also its limitations since the analysis was developed for a stationary economy. In this context, "One must first show which among the equilibrium relationships that are fulfilled in the stationary state are really important from the viewpoint of monetary theory; and one has also to demonstrate how these relationships look under non-stationary conditions" (ME, p.40). In fact,

> "Our central statement of the problem in the subsequent chapters is therefore the following: From the standpoint of the fundamental idea of Wicksell's monetary theory, what do the properties of a price situation in a non-stationary course of events have to be in order that this situation can be characterized as a position of monetary equilibrium?" (ME, p.42)

Woodford acknowledges in Myrdal (1931) a distinct approach from "[Wicksell's] general equilibrium approach [which] meant a *static* model of resource allocation, not obviously applicable to the problems of intertemporal resource allocation with which they were primarily concerned" (2003, footnote 2, p.5). However, the Wicksell analysis is able to go beyond this. Myrdal recognised that although there are theoretical limitations, Wicksell's insights are very powerful for the equilibrium analysis [see, for example, Wicksell, (1898), Chapter 9]. Here, Myrdal's immanent critique of Wicksell's equilibrium conditions will not be described because it is not of central interest for this article [for an extended version of this critique see de León (2011)].

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5 The transformation of Wicksell's three ME conditions by Myrdal: the foundation blocks for a newer, more institutional oriented, consensus macroeconomic model

In this section, the foundation blocks of Myrdal's ME model are presented. Following the original presentation, each one of these blocks will be described in reference to the ME conditions identified in Wicksell. It will be a more positive than critical presentation, in concordance with Myrdal.

5.1 The first ME condition

Regarding the first ME condition, i.e., the 'normal rate of interest' must equal the marginal technical productivity of real capital (natural rate of interest), Myrdal was clear that this definition was taken to the theoretical limitations that the determination of capital profits independently of interest rates implies [see, for instance, Sraffa (1960), and Chiodi (1991) and the Cambridge debate]. However, Myrdal identified another analytical approach in which the first condition can be reformulated and linked to ME in a dynamic economic approach. For instance, Seccareccia (1992, p.155) explained that, "this [first] condition can be partially salvaged, according to Myrdal, if the natural rate is defined,

instead, as an *ex ante* expectational variable giving the anticipated monetary return on an investment".

Myrdal acknowledged this in his analysis: given theoretical and analytical limitations in defining the natural rate of interest, Wicksell's first condition cannot be a practical guide to identifying ME. Myrdal's more complete analysis of that equilibrium was transformed from the Wicksell framework into a relationship between investment and interest rates that is useful to explain the second equilibrium condition.

In order to explain the Myrdalian process of such a transformation, it is necessary to define the concept of *real capital yield* which is "the productivity rate which is reckoned in monetary terms and expressed in a price relation" (ME, p.54). Furthermore, this yield should be identified in a dynamic context as a variable in *ex ante* and *ex post* moments. While *ex ante*, this yield can be related to the expected profitability of capital; and e*x post* is when capital profitability is registered in accounting books at the end of the period. However, "it is [the] calculation *ex ante* which corresponds to the main argument in Wicksell's theory" (ME, p.59).[6]

In general, *ex ante* "the yield, y'_1, is obtained by dividing the net return so calculated by the capital value c'_1 of the capital goods at the time of calculations" (ME, p.59):

$$y'_1 = \frac{e'}{c'_1} \tag{1}$$

where y_1' = yield of existing real capital, e' = net return, which may also be, for a individual firm for a unit period, calculated *ex ante*, at a given point of time as the discounted sum of all anticipations of gross returns in the next unit period, b' *minus* the discounted sum of all anticipations of gross cost (operating cost), m' *minus* the difference between the present value of the real capital and the expected capital value at the end of the unit period, d'. Thus we obtain the following equation:

$$e' = b' - (m' + d')$$

and c'_1 equals value of existing real capital, that is the capitalised value of a perpetual net return of the size of the net return of the next unit period – or is equal to the capitalised value of an unchanged net return of any number of time units in the future plus the same capital value at the end of the period.[7] Then, the capital value is (in other words) the price reflection of two magnitudes: net return and the 'market rate of interest' (ME, p.62).

In ME, Myrdal also extended the concept of *the value of existing real capital*, including the concepts of capital value depreciation and appreciation during the period in order for the value of real capital to remain constant, "Otherwise the net return contains not only an amount corresponding to interest but also an item of amortization" (Myrdal, ME, p.55).

From another point of view on real capital, Myrdal considered that capital values are *also* the discounted sum of all future gross income minus operating costs,

> "The capital value is thus equal to the capitalized value of a perpetual net return of the size of the net return of the next unit period"…The capital value from this standpoint is in other words only a price reflexion of the two magnitudes: Net return and "market rate of interest." (ME, p.62)

That is, if capital values are the capitalised value of a perpetual net return, they can be defined as:

$$c_1' = \frac{e'}{i} \tag{2}$$

where

c_1 = value of existing real capital

e = net return

i = the market interest rate (the 'money rate' of interest).

Myrdal pointed out "This means among other things that there is always and necessarily a conformity between the yield thus defined and the interest rate in the market; for capital value and value return are defined in such a way that they must constantly fulfil [sic] this equation" (ME, p.63).

Now, the difference between c_1 minus r_1 can also be reflected as a *profit margin*, that is:

$$q' = \left(c_1' - r_1' \right) \tag{3}$$

where

q' = profit margin

c_1' = the value of existing real capital

r_1' = the cost of existing real capital reproduction.

According to Myrdal, the elasticity of investment in relation to profit margin can be related to:

$$r_2' = f\left(c_1' - r_1' \right) = f\left(q' \right) \tag{4}$$

where

r_2' = the cost of new investment production

c_1' = the value of existing real capital

r_1' = the cost of existing real capital reproduction

q' = the profit margin.

By relating the elasticity of investment to profit margin, the relationship between investment and interest rates may be identified, while interest rates affect c_1.

In Figure 1, the relationship between investment, R_2, or I, and interest rates is shown through the impact of the interest rate on the value of existing real capital. An increase (decrease) in interest rates reduces (increase) that value and therefore the difference between $c_1' - r_1'$ which then induces a decrease (increase) in investment.

Figure 1
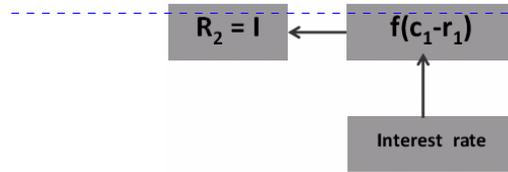
In this context, besides $c_1 = r_1$ where R_2, investment, is equal to zero (stationary state), investment is undetermined out of that stationary state and it is necessary to go to the Wicksell second equilibrium condition so that the first condition will make more sense in terms of ME.

5.2   *The second Wicksellian ME condition according to Myrdal*

Once Myrdal had established the relationship between investment and interest rates, and that there is an 'undetermined' amount of investment, the second Wicksellian ME condition, i.e., the 'normal rate of interest' must equate the supply and the demand for savings, is analysed. For Myrdal, the analysis of this equality led to a framework of a non-stationary economy with stable expectations. One must consider the equality/inequality between the amount of savings and investments during two moments of the period: the planned or desired ones at the beginning of the period (*ex ante*) and the results at the end of the period (*ex post).*

Before proceeding to an analysis of the second condition, Myrdal's *immanent* critique of it should be considered. Myrdal pointed out,

> "From the point of view of monetary theory, the role of the first formula is merely to explain *why* and *how* equilibrium is or is not maintained in the capital market . . . Wicksell himself has set forth this second formula only very loosely and obscurely . . . The obscurity in Wicksell's discussion of the second formula comes from the fact that he never really defined what he meant by savings and investing -or by supply of and demand for savings, as he usually says- and the fact that he has even less clearly shown the connection of this relation with the profit relation discussed in the last chapter." (ME, pp.87–88)

It is clear then that the definition of savings does not imply 'real capital' as sometimes suggested by Wicksell; rather, savings should be defined as a part of income, namely that part which is not used in the demand for consumption goods. As a result, "Intermediate between the decision of the saver not to consume his whole money income and the decision of the entrepreneur to make real investments with his own or someone's capital, is the whole process of price formation" (ME, p.90).

For Myrdal, the equality of savings and investment is identified at two moments: *ex ante* and *ex post*. Ex post equality is obtained in a book-keeping process and thus 'by default'. Ex ante equality is identified as equality between the savings and reserves for depreciation in relation to a gross real investment plan. This situation gave rise to the following statement:

"If one wants to isolate real investment instead of saving on one side of the equation, one can formulate the second equilibrium condition as follows: The money rate of interest is normal if it brings about an *equality between gross real investment on the one side and saving plus total anticipated value-change of the real capital, i.e., plus expected decreases in value minus increases in value of the existing real capital, on the other side."* (ME, p.96)

Myrdal continued:

"In this equation gross real investment, R_2, is compared with a magnitude, which I will call "waiting" or "free capital disposal," W, and which contains besides savings proper, S, the term anticipated value-change, i.e., depreciation minus appreciation, D. This capital disposal, W, is "free" from the standpoint of the private entrepreneur in the sense that, aside from the saved part of his income, and without selling or mortgaging his real capital, he can dispose of exactly such a part of the invested property value as corresponds to the amount of depreciation minus appreciation. For depreciation and appreciation are nothing else than calculated terms, subtracted or added to the balance of gross returns less operating costs only in order to make the net returns (=income) by definition congruent with the notion of interest." (ME, p.97)

Here, it is relevant to analyse another of Myrdal's definition of savings,

"Therefore, depending upon the nature of his real capital, the amount of free disposal [savings] is more or less than the individual entrepreneur – his income and his consumption being given – decides to devote to the increase or decrease of his property." (ME, p.97)

Note that savings is not a residual like in Keynes' *General Theory*. Here, savings is a *desired* amount, similar to the desired savings à la Harrod. This is a relevant definition in order to obtain a dynamic analysis. Going back to Wicksell's second equilibrium formula, this should, therefore, be written as (ME, p.97):

$$R_2 = W = (S + D) \tag{5}$$

where

R_2 = the cost of production of new investment

W = free capital disposal

S = savings proper

D = the value-change defined as anticipated (depreciation minus appreciation).

Myrdal wrote that, "free capital disposal" would correspond to the "wage fund" in classical theory, provided the concept was modified in such a way as to fit into a non-stationary analysis" (ME, p.97). In order to illustrate the mechanisms of the movement of inequality between *ex ante* savings and investment towards the *ex post* equality, I present the following figure, where CG corresponds to supply or demand of consumption goods as specified:
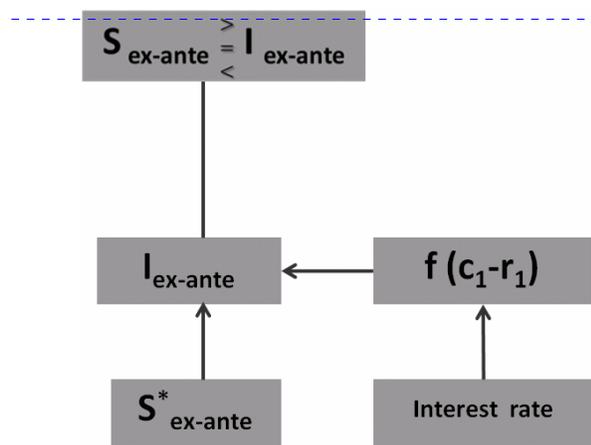
Figure 2
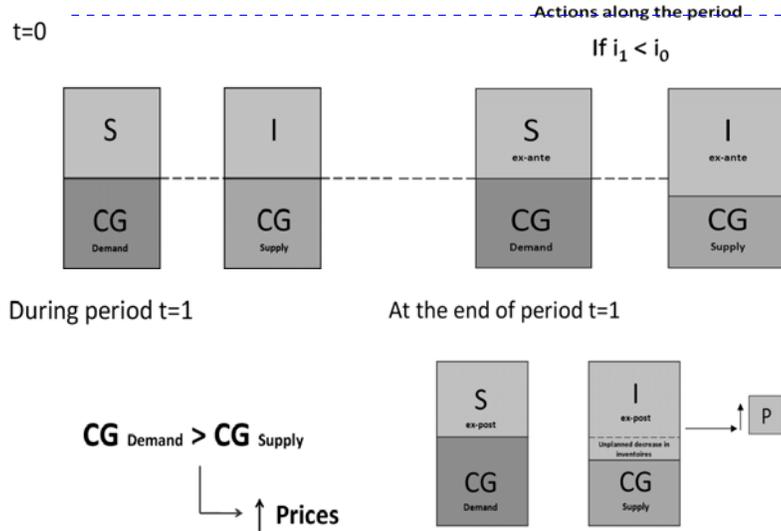
In Myrdal's view, the position of monetary equilibrium defined as $R_2 = W = (S + D)$ is affected by lowering the money rate of interest as shown above. He described this as follows: "Increased values of real capital immediately result. The profit margin rises, and consequently a tendency towards *increased real investments* is brought about in this initial position" (ME, p.104). He went on to explain that while there was no change in anticipation or consumption, free capital remains unchanged and,

> "[while] free capital disposal would thus remained unchanged . . . real investment would of course be further stimulated by the altered anticipations causing the profit margin to rise more than it should have under constant anticipations. But if, with increasing incomes (increasing because of the change in anticipations), the *demand for consumption goods* rises too, then free capital disposal declines, while at the same time real investment increases still more." (ME, pp.105–106)

This process can be viewed as accumulative because entrepreneurs maintain their expectations of increasing prices. The accumulative feature of this analysis was highly appreciated in Wicksell (1898) and furthered by Myrdal's work. It may be said that this feature was one of the most valuable for Myrdal in later years.

Now, the relationship between *ex ante* savings as free capital and planned investment can be identified with the first ME condition. For a given amount of (*ex ante*) savings, there is an equivalent amount of planned investment that warrants the *ex ante* equilibrium. This investment, as defined by Myrdal, is determined by the interest rate.

Figure 3

$$S_{ex\text{-}ante} \overset{>}{\underset{<}{=}} I_{ex\text{-}ante}$$

$$I_{ex\text{-}ante} \longleftarrow f(c_1 - r_1)$$

$$S^*_{ex\text{-}ante} \qquad \text{Interest rate}$$

Therefore, in the extension of the Wicksellian first and second ME conditions identified by Myrdal, both conditions are not independent of each other. They converge into one when a given interest rate maintains equality between free capital and planned investment. Here again, this process of equilibrium/disequilibrium identified by Myrdal is described in dynamic terms by analysing anticipated and realised profits, i.e., *ex ante* and *ex post*. Any difference between *ex ante* savings and planned investment would cause entrepreneurs to take home losses or benefits in the ex post values of real capital which reflect the monetary yield of an investment related to its monetary costs.

In addition, Myrdal, following Lindahl, translated the differences between savings and investment as excess or deficient demand on consumption goods. Subsequently, any inequality where planned investment is greater (lesser) than *ex ante* savings would be reflected in an increase (decrease) in prices but not in general or consumption goods, as in Wicksell or Lindahl, but rather in a very particular approach. This analysis takes us to the third ME condition.

5.3   The third Wicksellian ME condition according to Myrdal

Myrdal wrote regarding the 'original' statement of Wicksell's third ME condition:

> "By a third determination of the monetary equilibrium position, Wicksell wished to relate it to the conditions on the commodity market. The normal rate of interest, he said, is the money rate which is just necessary in order to keep the "general price level" of finished commodities constant. However, Wicksell was unable to furnish a real proof of this proposition. Moreover, this idea is false, as I shall presently prove." (ME, p.126)

Myrdal argued that the two previous ME conditions had to be redefined. "[Wicksell] could not derive from the two preceding equilibrium criteria a theoretically consistent equilibrium formula for the price level" (ME, p.128). Furthermore, Myrdal advanced the hypothesis that,

> "He [Wicksell] accepted the comfortable formula of a constant price level more by sentiment and as a result of a normative, *a priori*, intuition . . . And since monetary equilibrium was for him not only a theoretical instrument but also an ideal for monetary policy, again he reached the conclusion that the money rate would guarantee an unchanging price level of consumption goods if it were normal and corresponded to the natural rate." (ME, p.128)

In fact, Myrdal wrote in relation to this third equilibrium condition, "The development of the price level would seem to have nothing to do with monetary equilibrium" (ME, p.133). Myrdal pointed this out in relation to the acceptance of the Wicksellian hypothesis. He stated that at least in Sweden,

> "A formulation by no means clear in principle appeared to be correct because it proved to be "practical;"something desired became truth; a rather old experience in the history of economic doctrines. By emphasizing "the general price level" he established close contact with the traditions of the old quantity theory, which Wicksell never intended to displace but only to improve" (ME, p. 129).[8]

According to Myrdal, although the three Wicksellian ME conditions are flawed from the beginning, they could be reinterpreted to fulfil Wicksell's intuition. Myrdal certainly found a relationship between interest rates and prices based on a set of economic observations and principles. In doing so, he also discovered the scope and limitations of the Wicksellian hypothesis. But before Myrdal 'rebuilt' the Wicksellian structure, he redefined the concept of a relevant 'general' price index. He pointed out "the [monetary] equilibrium character of a situation cannot . . . be characterized sufficiently by a mere study of the general price movements" (ME, p.142). In developing the concept known as the Myrdalian price index [named by this author], Myrdal emphasised the institutional fact that not all prices are affected in the same way by the disequilibrium related to savings and investment, nor in their relation to consumption goods either. Myrdal considered the fact that some prices are sticky because of the institutional arrangements in the goods and labour markets.

In the Myrdalian framework, the price index is related to ME as defined by the second equilibrium condition and institutional facts. Thus, Myrdal clarified that "Even apart from . . . contracts, fixing returns and costs for certain economic subjects, there is a general element of *inertia* in the adjustment of the economic system to primary changes" (ME, p.134). He went on to state that they [prices] depend "upon different institutional circumstances – upon law, conventions, consumption habits, methods of production, patterns of marketing, price policies, monopolistic elements of all sorts" (ME, p.135). Here, it is appropriate to note that while most of current literature based the stickiness of prices on market imperfections, Myrdal also focused on its institutional foundations.

Following Myrdal's conceptual construction, it is possible to identify among all the prices in the economy, a dichotomy between 'sticky' and flexible prices. This dichotomy has relevant policy implications, "The sticky prices would act as a restraint on the price system: A monetary policy aimed to preserve the equilibrium relations must, therefore, *adapt the flexible prices to the absolute level of the sticky ones*" (ME, pp.134–135). The policy objective is to 'adjust' price stability to the 'sticky' ones. In particular, "When we talk about sticky and flexible prices we are already thinking in terms of indices of different price levels, of which the first sets a limit to the movement of the price system under conditions of a monetary equilibrium" (ME, p.136).

Subsequently, the Myrdalian price index should focus not only on sticky prices, but also take into account the relative importance of their relation to investment goods. Specifically, the Myrdalian price index

> "should be defined as an index in which the individual price are weighted, first, with respect to their stickiness of reaction, and second, with respect to their relative importance in the calculations of profitability by entrepreneurs and consequently in the volume of real investment." (ME, pp.136–137)

Particularly, in this index "prices of various goods, or of the same goods in various markets, are weighted with respect to their stickiness and according to their significance for real investment" (ME, p.194). Even with the practical difficulties in building this index, (see Palander, 1953), it is important to point out that such an index must take into consideration the institutional circumstances that allow us to go from theory to reality. Myrdal is firm in this regard and he wrote,

> "By means of further analysis of the weighting system . . . monetary theory is brought into touch with all the institutional circumstances which determine price formation in reality, but which are overlooked so often in abstract theory. Only by being confronted in this way with realities of social life via the stickiness of prices can a perfection of monetary theory be expected in future." (ME, p.137)

In the Myrdalian framework, where the three Wicksell ME conditions are transformed and 'collapsed' into a particular level price, they are directly related to the difference between money and real interest rates. In Figure 4, a graphic approach to the relationship among the three conditions is presented,

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Figure 4
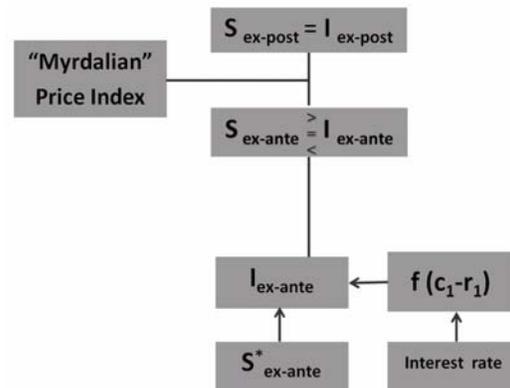
6   Lessons from Myrdal's *ME*: the indifference field of ME

Fulfilling the three ME conditions as developed by Myrdal allows us to obtain some relevant lessons for the analysis of the monetary rules. Specifically, the conditions create a better understanding of the so-called indifference field of ME, the efficiency of monetary policy under interest rate rules in an economic depression, ME (norm) as

stabilising policy, the limitations of monetary policy as employment policy, and monetary policy as social policy. These five lessons are analysed in de León (2011). In this article, for reasons of space, only a presentation of the indifference field in monetary policy is given.

As we can see from Figure 5, the Myrdalian framework demonstrates that interest rates as a ME policy depend on the 'stability' of savings ex-ante.[9] By developing the concept of an indifference field of ME, Myrdal primarily focused on the possibility of having the same effect on ME from a variety of interest rates and credit conditions. If, in Wicksell's hypothesis, the money interest rate is considered as an abstraction of a mixed group of various interest rates in an equally variable group of credit conditions, the reality is that one may think of different combinations. Myrdal pointed out that,

> "[Because of] the fact that in reality there is not a single 'rate of interest' but a heterogeneous system of credit conditions of various kinds . . . it must be possible to think of various combinations of different interest rates, and of interest rates with other combinations, which in a given situation would have an equal effect in bringing about monetary equilibrium." (ME, p. 159).

The latter case of the Myrdalian framework is illustrated below:

Figure 5
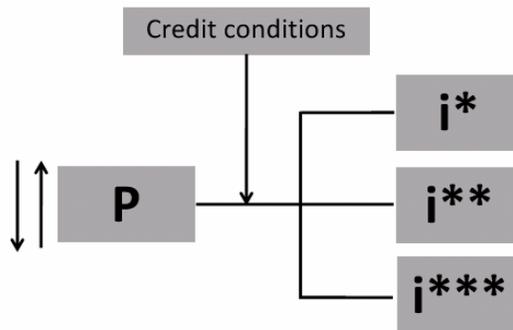
Further in his analysis, Myrdal (ME, p.160) included other changes in different factors influencing the price identified in the Myrdalian price index in his framework. He suggested that it may be useful to group together all those social factors which are, or can be, subject to public control, such as the means of monetary policy, proper of ME, and *uncontrollable* economic factors. In this context, Myrdal added that "The line of demarcation is entirely determined by the institutional and political structure of the economy concerned at the time and is thus not fixed" (ME, p.160).

He also stated that,

> "In admitting the possibility of different combinations with regard to which the conditions of monetary equilibrium are "indifferent" within a large field, one is not yet, however, outside the realm of the equilibrium concept. On the contrary, these combination problems can be discussed only in the framework of the equilibrium concept." (ME, p.161)

That combination opens the possibility of an indifference field of ME. This field is even wider if one considers the conditions that ME is determined by circumstances such as all social factors, including credit conditions, which can be made subject to public control;

short/long term interest rates; closed/open economy; impact on consumption goods; Savings rates of contractors and entrepreneurs.

The complete framework that illustrates the mechanics of ME and its indifference field is presented in Figure 6, according to this author's interpretation of ME.

Figure 6

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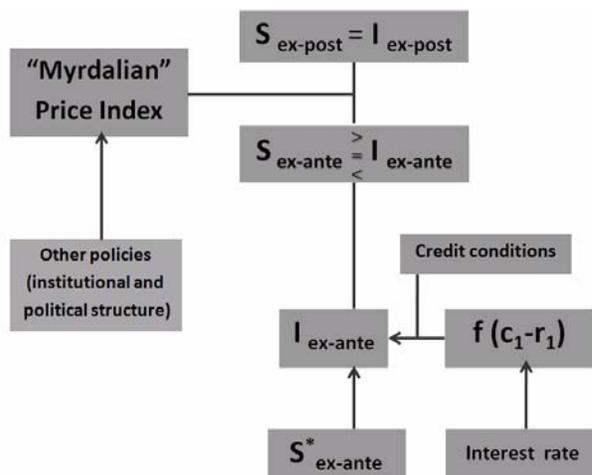
According to Myrdal,

> "Maintaining a monetary equilibrium becomes a question not only of a monetary policy but of economic policy as a whole, social policy and the institutions which rule the labor market, cartel legislation and all related factors. Various combinations of these heterogeneous things, more or less under political control, together with appropriate values of the standard combination of credit conditions, produce stable monetary equilibrium relations." (ME, p.184)

Although the indifference field had highest importance for further development of monetary theory and was especially important for the discussion of monetary policy, Myrdal wrote "The problem of the indifference field of monetary equilibrium cannot be dealt with here in details" (ME, p.161). He went on, instead, to contribute to the debate on the *ineffectiveness of the Discount Rate* in Sweden around 1932. He focused on the effects of tightening of credit conditions on ME to prevent the depreciation of the *Krona*. His analysis developed many insights into the relevant factors which may interact with credit conditions; their results in terms of that policy objective; and their influences on production, employment, and social policy (see ME, pp.161–176). Here, a long quotation that tries to summarise these results is given:

> "There are certain general inferences to be drawn from the broad indifference regions, illustrated by the examples discussed above. First, it is wrong to conclude from the supposition of a fairly stable situation on the capital market, or from relative stable price or exchange relations that just the credit policy, discount rates and credit restrictions exist, or have existed, which are necessary to maintain monetary equilibrium. For it is possible, and, in times of crisis like the present, even probable, that monetary equilibrium would be maintained

> either by a substantially more or a substantially less severe credit pressure – and, to be sure, with a larger or smaller volume of production and employment and a more or less strained social policy. One is naturally guilty of a still more dangerous error if, from the same assumptions, one draws the conclusion that in credit policy we have actually a means at hand with which we can practically and effectively control and stabilize the given situation. If it is actually stabilized for a certain period that is the result of a very complicated system of causes, and the ability of the credit policy to attain the same result with important shifts among the other causes is certainly not proved by this stability. The worst mistake of all would, of course, arise if one saw in such a situation a proof of the efficacy of the rate of discount in particular. The Central Bank might be able to maintain a very low or a very high rate of discount at will, and in either case attain equality in the relation between the volume of real investment and free capital disposal. Nevertheless, the shift… is not without importance, not only for the profitability of the banks . . . and, *in general, for the distribution of incomes in the society.*" (ME, pp.175–176, my emphasis)

Even more significant for the implications of the indifference field,

> "Monetary equilibrium can be attained by quite different combinations of credit conditions. Further, these different combinations are not politically indifferent but necessarily signify a discrimination between various types of demand of credit...various social groups would be interested in different combinations of credit conditions . . . But immediately the problem of monetary policy is really taken up for discussion... the problem of the connection between monetary policy and all other economic policy necessarily becomes important." (ME, p.182, p.185)

In this approach, Myrdal identified that, although there is an open field of indifference to obtain price stability this indifference is not unrelated to a specific economic policy in a wider sense, including those directly or indirectly associated with income distribution.

Ohlin (1937a, 1937b) offered a synthesis of what he called the Stockholm Theory of Savings and Investments (as developed by Wicksell, Lindahl, and Myrdal); later it became known as the Swedish School. While Ohlin only emphasised the dynamic approach, he did not go into details on monetary policy or monetary rules. In fact, Ohlin only considered Chapter 5 of Myrdal's work [see Ohlin, (1937a), footnote 1, p.57], in which Wicksell's second equilibrium condition is discussed, without mentioning either the first or third. And here, we should mention that Palander (1941, 1953, p.53) mentioned some critical work of Ohlin (1933) on the *Myrdalian price index*'s practical utility, where he considered that the weighting figures would be inaccessible in practice.

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7   Reasons why we should read Myrdal's EM

Since the current conventional approach (see Woodford, 2003) only analyses the effectiveness of interest rates rules in a stationary state, while singling out monetary policy from the rest of economic policy, this approach is not very useful in times of economic distress like the current financial crisis. It also does not take into account the institutional facts surrounding monetary policy. Subsequently, Myrdal provided readers with some interesting insights such as the Myrdalian price index and his work advanced the concept of an *indifference field,* which allows the exploration of the interrelationship between monetary policy and explicit and implicit economic policy. Furthermore, Myrdal argued that given disequilibrium between *ex post* savings and planned investment, the

efficiency of monetary rules is limited. But why have these valuable lessons been forgotten in the literature? Several hypotheses are offered:

First, perhaps Myrdal's analysis is somewhat limited as he himself pointed out, "There is not reason to hide the fact that the analysis has been more successful in discovering than in solving open problems" (ME, p.204).

Second, Myrdal's work might be too simplistic as he acknowledged, "It may be admitted without hesitation that a certain journalistic superficiality during this period had a real value" (ME, p.1). In the latter years of his life, Myrdal did not really appreciate his contribution to monetary policy,

> "Our writings [of the Swedish economists] during these years [1930-32] in the early thirties, and before we were engulfed in practical and political tasks, are the foundation for what doubtful claim we may have to the esteem in which the so-called Stockholm School has occasionally been held abroad. If it ever existed, now at any rate, it is dispersed." [Myrdal (1958), as quoted in Appleqvist and Anderson (2005, p.21)]

Third, as Jonung (1979, p.491) noted,

> "The latter (Stockholm School) is based on a number of new concepts introduced by Ohlin. These concepts are, however, difficult or impossible to use in empirical work, because one cannot find measurable quantities for them. Thus, the theory becomes impossible to disprove or verify through empirical work."

Myrdal also acknowledged this limitation, "We must leave unsettled the important questions of how Wicksell's theory may be related to reality by restating his equilibrium formulas in observable and measurable terms. We have not hidden the difficulties" (ME, p.124). However, national accounting in leading and anticipation indicators have certainly advanced, and they can be worked out for this purpose; or, we may find creative ways to conceptualise *ex ante* terms.[10]

Fourth, while most of national economies follow a growth pattern of a stationary state, analysis of non-stationary states seems to be a very special case, which unfortunately disappeared from the academic mainstream. In fact, after the publication of ME in English, in 1939,[11] there were reviews by Robinson et al. (1939, 1941), Shackle (1967), and Hansson (1982). Later, Myrdal was mentioned in a couple of chapters in Dostaler et al. (1992), by Seccareccia et al. (1999), De Aguirre (2000b), Woodford (2003) and more recently by Tobon (2006) and Siven (2006). In any case, they discussed the analysis of monetary policy based on interest rates, rather than emphasising the role of anticipation in price formation, the mechanics of a temporary equilibrium method or the critique of Wicksell's hypothesis. Fontana and Setterfield (2009); and Reardon (2009) offer alternative models for teaching the *New Consensus Macroeconomic Model*; however, Wicksell is referenced, but not Myrdal. There is a short mention in Woodford (2003), in footnote No. 2, p.5, quoted above in this article.

In conclusion, this article expects to offer a motivation for reading ME, and I recommend the Myrdalian monetary analysis in every economist's toolbox.

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Notes

1   That is, an economy with an unlimited velocity of money.

2   Wicksell was one of the first economists to build on the concepts of what we know as macroeconomics, rather than the wider concept of a general equilibrium.

3   I will not debate whether the natural rate of interest can be effectively defined in this way. However, there is an interesting analysis in De Aguirre (2000a, 2000b).

4   Here, the process is briefly outlined because there are many interpretations of this progression, including (Wicksell, 1898).

5   Felix Hamrin, Sweden's Minister of Finance, 27th of September, 1931, as quoted in Berg and Jonung (1998, p.5).

6   For that reason, in this section, I am not going into the ex post analysis. For that analysis, see Myrdal, ME, Chapter 4.

7   For this and further equations: "Accents are attached to small [lower case] letters to distinguish values pertaining to different individual firms. Subscripts 1 and 2 signify that the values refer to existing real capital or new investment respectively" (ME, p.85).

8   This statement has significant implications for the debate on the relationship between Wicksell's hypothesis and monetary quantitative theory. However, this paper will not discuss this debate.

9   In fact, from the trends of an increasing ex ante savings after the economic depression in the early 1930s in Sweden, Myrdal identified a relative ineffectiveness of interest rates (see de León, 2011).

10 For an illustration, see de León (2010), who empirically identified concepts such as desired or warranted savings à la Harrod.

11 An earlier review was conducted by Thomas (1936) in English, from the German translation.