Monetary Policy with Dual Mandate: An Optimization Problem

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(A Study Case)
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Abstract

The dual monetary mandate—fostering growth as well as a stable rate of inflation—has always faced resistance from some governments and economists, particularly in emerging markets with inflation-targeting central banks. In several countries there is a strong resistance to implement a dual mandate but also to open a debate on the topic. The main argument against adopting a double mandate is an apparent inconsistency between objectives and instruments and also about a potential risk for monetary independence. Mexico is taken as a study case since the nation is already embarked on a reform process; however, if the country really wants to modernize, then reforms should be implemented at all levels, including economic policy and institutions. For economic policy to better respond to the new challenge of growth with stability, a dual monetary mandate should be adopted and a structural fiscal rule should become a mandate for the country. This paper illustrates that, far from being a threat to monetary independence, the dual mandate is more effective for improving social well-being since it represents the maximization of growth with the minimum of inflation: An optimization problem to be resolved by the central bank.

1. Resistance to change

As a result of decades of galloping inflations and persistently-high rate of growth in consumer prices, there was a proliferation of central banks adopting a single-objective monetary policy, not only as a need to fight inflation but also as a way to create confidence and independence in the use of monetary policy. Hence, the autonomy and the single-objective monetary policy were key factors to achieve the largely-desired price stabilization, particularly in emerging market economies like in the case of Latin America at the end of the 90s when inflation finally fell back into single-digit rates[1/]. Since then, and along the past

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[1/] See Coutino (2011a).

two decades, the single-objective monetary policy accomplished its mission: inflation has been relatively low and its variability has been reduced.

Even though inflation has been controlled and maintained around central banks' targets in the past decade, that hyperinflations are more exceptions than a rule, and that it is time to put more emphasis on economic growth, the idea of modernizing the single monetary mandate still faces strong rejection. The main opposition to the adoption of a dual monetary mandate comes from policymakers, followed by a group of economists, basically arguing three points. First, it is said that the dual mandate constitutes a risk for the independence of monetary policy and consequently for the autonomy of the central bank. Second, it is argued that a dual mandate could raise the temptation of favoring growth and sacrificing inflation. Third, they invoke the traditional inconsistency of targeting two objectives and using a single instrument.

But there are counter-arguments to the opposition. In general, we can say that the empirical evidence shows that a dual mandate does not reduce the independence of monetary policy. Also, the central bank would be irresponsible to favor growth to the detriment of inflation under a dual mandate. In addition, a dual mandate is in practice a way to reinforce the ultimate purpose of economic policy: the promotion of social well-being, through promoting a stable and permanent growth path.

For the case of Mexico, in the last decade, there have been a couple of timid attempts to bring the debate about a dual mandate into the Mexican Congress. Unfortunately, such discussions have been blocked, mainly because of strong official opposition and because of weak support from other political parties. However, in the past few years, Mexico's monetary policy has been carried out with an implicit dual mandate. Therefore, it might now be a better time for politicians in Congress to evaluate the possibility of modernizing monetary policy for the true service of Mexicans.

2. Preconditions

There are two pre-requisites, or initial conditions, for the adoption of a dual monetary mandate in order to maximize its benefits. First, it is necessary to have achieved an inflation rate that is permanently low and stable; second, fiscal responsibility must be a rule and a permanent goal.

"Permanently low" inflation implies that the annual rate of price increases stays close to the structural rate of inflation for a prolonged period. Structural inflation is the measure that reflects the genuine structure of the system of price formation in the economy. This structural inflation is not necessarily the inflation target established by the central bank, since that in many cases only represents a desired target popularly adopted.

A "stable inflation" is one that shows a reduced variability through time, generally a small variance[2]. Stability implies that the annual rate of inflation does not report significant ups and downs from one month to another over an extended time. In fact, the inflation rate should remain, for a long period of time, within a marginal range that allows it to accommodate transitory disturbances. So far, Mexico has achieved an inflation rate with low and stable features (Chart 1). Therefore, as stated by former Fed's chairman Bernanke[3], stable prices are a prerequisite to the achievement of other mandates as in the case of maximum growth.

However, Mexico has not fully adopted the second condition: strict fiscal discipline[4]. In fact, a structural fiscal rule was announced at the end of 2012, but it has not been applied in practice. The full application of the structural fiscal rule is necessary to ensure that fiscal policy will not be used for political purposes.

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[2] Further details on "low and stable" inflation can be found in Poole and Wheelock (2007).
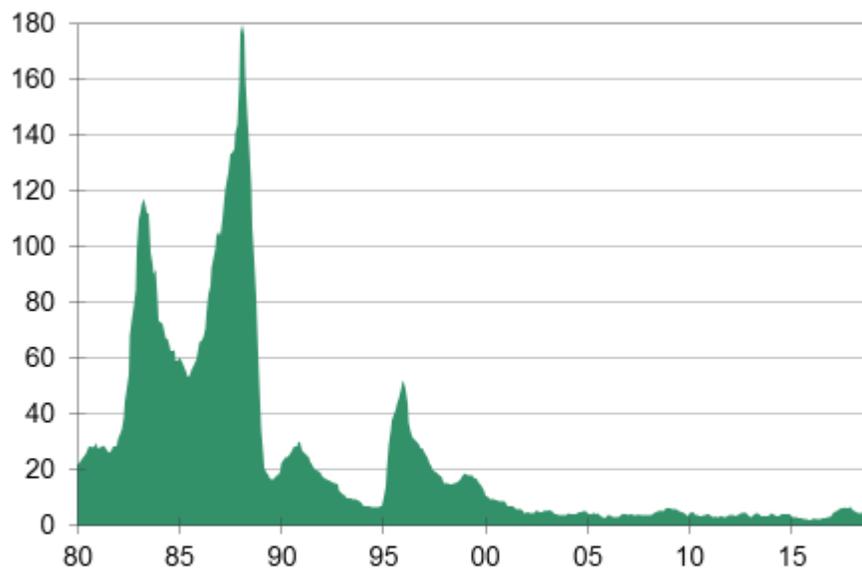[3] Bernanke (2006).
[4] A proposal for Mexico can be found in Coutino (2011).

Given that fiscal revenues and expenses are automatically predetermined by potential growth and by the structural price of oil, the structural rule eliminates the risk of manipulation of those estimates.

Chart 1

More Stable and Low Inflation

(CPI, % change year ago)

Source: Author with data from INEGI.

The same way that the monetary mandate is an exclusive responsibility of the Congress, politicians should impose the fiscal structural rule on the Mexican government. This will allow the country to fulfill the two prerequisites for the adoption of the dual monetary mandate in a relatively short period of time.

3. Arguments in favor

The single-objective monetary mandate—to manage inflation—has been in place for at least the past two decades, and was established as a necessity to fight persistently high inflation of the 1980s and 90s,

particularly in emerging market economies. The single mandate was quite successful in reducing inflation and price volatility in Mexico, particularly because the introduction of monetary independence in 1994 forced the government to be more fiscally responsible. Yet, once a country has achieved a low and stable inflation rate, the single mandate needs to be modernized in order to avoid limiting the largely-postponed economic progress. Since stability has been achieved by the single mandate, it is time for monetary policy to be reformed and adapted to new times. In other words, it is important to remove the lack of policy flexibility to deal with changing economic conditions[5], by allowing monetary policy to counter cyclical ups and downs in the economy. Certainly, monetary policy does not have the power to increase the natural rate of growth (production capacity), but it is an instrument to keep the economy functioning around its steady state, particularly in the presence of business-cycle disturbances[6].

After more than two decades of monetary independence, Mexico's inflation has moved structurally toward a low and stable average rate in the range of 3% to 4%, which coincides with Mexico's structural inflation rate (Chart 2). The structure of the system of price formation has progressed and several price rigidities have been removed. The formation of expectations has also changed, thus reducing the perverse inertial component inherited from inflationary episodes of the past. The pass-through effect from the currency movements to consumer prices has been reduced. The basket of controlled and regulated prices has shrunk, with more prices moving according to their international references. More recently, competition has been increased in activities highly monopolized by both public and private sectors.

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[5] See Williams (2015) for details on monetary inflexibility.
[6] As stated in Friedman (2008).

Chart 2

Structural Inflation Within the Range

(Core CPI, % change year ago)

Source: Author with data from INEGI.

However, the decades of stabilization efforts have had a cost in terms of economic growth. This is precisely the trade-off a country must face when anti-inflationary policy becomes a necessity. Under such a regime, Mexico has sacrificed growth in order to achieve stability. Stability is necessary, but it is not sufficient by itself to increase growth. The last decade of relatively low inflation shows that stability was not enough to promote growth. The Mexican economy underperformed in the past three administrations (18 years), advancing at an average rate of only 2.0%, lower than the 2.5% potential growth. For the economy to increase its production capacity, stability is necessary, but it has to be accompanied by structural reforms that increase the accumulation of capital and also include the modernization of monetary policy to focus also on promoting growth.

There is no empirical evidence indicating that the adoption of a dual mandate has affected monetary independence in cases where the two initial conditions pre-existed. In fact, central banks with a dual monetary mandate are among the banks with more traditions of independence, as in the case of the U.S. Federal Reserve[7] and the Reserve Bank of Australia, among others. Hence, arguing that dual mandates put monetary independence at risk only reveals the fear of a central bank with insufficient independence to undertake the challenge of modernization. The counter-argument is that we cannot say that the U.S. Federal Reserve is less independent than the Bank of Mexico only because the former has a dual mandate. Thus, the loss of monetary independence is an argument not validated by reality.

The dual monetary mandate does not imply inconsistency between two objectives and a single instrument, rather it represents the possibility for the central bank to play the genuine role of a maximizer of social well-being, which is precisely the ultimate objective of economic policy[8]. As in any economic problem, the role of a central bank is to solve an optimization problem: maximize an objective subject to a restriction. In practice the dual mandate aims to achieve maximum growth subject to minimum inflation, or vice versa, minimizing inflation subject to the restriction of maximizing growth. Hence, this maximization/minimization problem does not represent a threat to monetary independence and does not imply favoring growth over inflation. On the contrary, monetary policy will truly maximize the well-being of Mexicans by fostering both low inflation and maximum growth attainable.

Another argument in favor is that policy synchronization will strengthen and become a permanent rule. The evidence suggests that a country benefits more when fiscal and monetary policies are coordinated and pursue the same objectives. In contrast, a country faces a high cost when fiscal and monetary policies walk in opposite directions. There is a traditional conflict of interest between fiscal policy and a single-

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[7] The U.S. Federal Reserve is in the top-ten most independent central banks according to a sample of 67 countries reported in Barro (2008), pp 104-111.
[8] See Blinder (1998) and Mishkin (2007).

objective monetary policy, mainly because while the former focuses on promoting growth and contributing to stability the latter only focuses on inflation. To resolve this conflict and maximize well-being, monetary policy should be assigned the same two goals.

In the past few years, monetary policy has been practiced in Mexico with an implicit dual mandate, where growth has taken a more relevant role in the policy-making process. The rate cuts for a total of 150 basis points in 2013 and 2014 were justified with official arguments about low growth and weak domestic demand[9]. In fact, some of the minutes explicitly stated that the central bank Board of Governors was facing a dilemma between inflation and growth in its monetary decision making. Thus, defending a single mandate, when in practice the bank applies a dual one, is quite inconsistent.

In the end, it is necessary to remember that the monetary mandate is a constitutional one, assigned by politicians in Congress, not by an executive order or a decision made by the central bank. In this sense, adopting a dual monetary mandate is an exclusive decision to be taken by Congress. However, to maximize the benefits of monetary reform with a dual mandate, the Congress should also make the fiscal structural rule a constitutional mandate[10].

4. Monetary Policy as an Optimization Problem

The monetary policy mandate can be illustrated as an optimization problem to be resolved by the central bank. In the case of a single-objective mandate, the optimal level of the monetary instrument is chosen in principle with no restriction, since the only target is to minimize inflation. In the case of a dual mandate, the level of the instrument must be chosen as the optimal to ensure the minimum inflation with the

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[9] See Banxico (2013).
[10] The fiscal mandate was recommended by Coutino (2017).

maximum of growth attainable. The following specifications illustrate the problem to be resolved under a single and a dual monetary mandate, and do not have the purpose to find the conditions for optimality.

4.1. Single-mandate monetary regime.

In a single-mandate monetary policy, the central bank has to resolve the following problem:

Minimize π^d (i) = $(\pi - \pi^*)^2$

where π^d stands for the deviation of the actual inflation π from the inflation target π^*. The "i" is the argument of the inflation rate: the policy interest rate. The optimal policy rate (i*) is precisely the rate at which the inflation differential is zero on a steady basis or for a prolonged period of time (Chart 3). Since the deviation expression is squared, positive and negative deviations have the same weight.

Chart 3

Inflation Differential: $(\pi - \pi^*)^2$

(%)
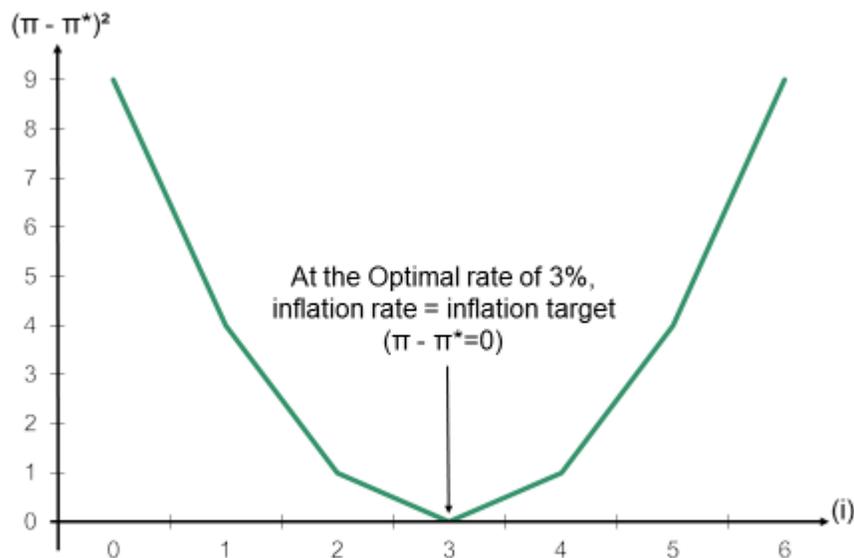
Source: Author.

Given that in a single-objective monetary policy the only mandate is inflation, then the optimization expression can be represented by an unconstrained optimization problem[11/], where the argument (policy interest rate) can take any value in the set of nonnegative real numbers (R+). This implies that in times of high inflation (positive differential), the central bank has to tighten monetary policy, by hiking the interest rate to any necessary level in order to reduce the actual inflation toward the target rate and to make the inflation differential basically zero, regardless where the economy's growth ends.

This explains why in episodes of prolonged high inflation there is always a significant tradeoff between inflation and growth. In fact, in that situation, the fight for inflation usually puts the economy in recession. The opposite is also true. In episodes of deflation, the central bank can cut the interest rate as much as necessary to reactivate prices—with the only limitation of the zero lower bound[12/]— regardless where the economy goes. Therefore, even though single-mandate central bankers argue that growth is always taken into account in policymaking decisions, there is nothing to prevent them from hiking the interest rate in order to bring a high inflation rate down and close to target. In order words, economic growth is only an implicit target in a single-mandate monetary regime, but it is neither a priority nor a mandate.

4.2. Dual-mandate monetary regime

The optimization problem in a dual monetary mandate deals with reaching the minimum inflation subject to attaining the maximum economic growth attainable. In other words, it can be illustrated as a constrained problem, where the minimization of the inflation differential is subject to the minimum deviation between the actual growth and the potential growth, in principle a zero deviation.

[11/] See Simon and Blume (1994) for details on unconstrained optimization problems.
[12/] See Brainard (2015) and Summers (2018).

Alternatively, the problem can be expressed as the maximum growth subject to the minimum of inflation[13]. Hence, it can be defined as the minimization of the output gap subject to the minimum of the inflation differential:

Minimize $\overset{d}{Y}$ (i) = (Y - Y*)^2

subject to: Min $\overset{d}{\pi}$;   [$\overset{d}{\pi}$ = F ($\overset{d}{Y}$): Reducing the output gap minimizes the inflation differential].

where $\overset{d}{Y}$ is the output gap, which depends on the policy rate (i), Y* is the full employment output, and Y is actual output, both expressed in growth rates[14]. Also, the inflation differential is a function of the output gap, consistent with the fact that an overheating economy will necessarily generate higher inflation[15], which will deserve monetary tightening. The opposite is also true, a depressed economy could generate deflation, thus benefiting from some monetary relaxation.

In this case, the central bank must have to find the optimal level of the policy rate that brings the actual output close to the full employment output and the actual inflation close to the inflation target. Therefore, calibrating the policy rate will allow the central bank to reduce the output gap and consequently keep inflation close to target. Thus, by controlling the output gap through the calibration of the policy rate, the central bank will find the optimal balance between the level of inflation and an economy performing around its steady state. In other words, the central bank will not be tempted to use all the monetary artillery against inflation to the detriment of the economy's growth.

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[13] Alternative specification can be found in Chiang (1992), Taylor (1989), and Blinder (1998).
[14] The original objective function is F(.)=Y/Y*, which in percentage changes becomes the differential of growth rates between Y and Y*.
[15] Actual output can be fueled beyond potential output through a persistent excess demand generated by money expansion, as stated in Friedman (1970).

5. Concluding remarks

As illustrated by the optimization problem, the dual monetary mandate shows no inconsistency between targeting inflation and growth simultaneously through the use of the monetary instrument: the policy interest rate. On the contrary, it illustrates that the economy's performance does not need to be sacrificed in order to privilege inflation. More importantly, the dual mandate helps preserve social well-being because the calibration of the monetary instrument by the central bank allows the economy to avoid the ups and downs of the traditional business cycle at the same time that preserves price stability. Certainly, adding more than one objective to an optimization problem makes it more complex, but not inconsistent, rather it creates the need of a trade-off. In the case of the dual monetary mandate the optimal trade-off between inflation and growth is precisely the solution to the optimization problem.

It is important to note that in the dual monetary mandate, positive and negative deviations of inflation from the target are equally important to address. For example, an inflation rate persistently above target must be avoided—and so must a rate below target. Particularly in emerging markets in Latin America, where an inflation rate below target is mostly an exception, central banks consider that event as a monetary success rather than a concern.

An interesting case where the dual mandate can do better than in a single mandate is when monetary policy falls into fiscal dominance[16]. For example, when the central bank reduces the policy rate to levels inconsistent with the economy's structural conditions—even though the economy performs at potential and inflation is around target—just to benefit fiscal accounts. This case is illustrated by the Mexican economy in the 2014-2015 period, when the central bank persistently reduced the policy rate to historical levels, which not only generated a perverse incentive to increase public and private debt but also ended subject to fiscal dominance. In that situation, the single-objective central bank did not want to increase

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[16] See Coutino (2015) and Turner (2011).

the policy rate because the fiscal deficit was swelling, and certainly inflation was below target but the economy was over-expanding. In fact, the low inflation was merely an artificial event precisely because it was sustained by fiscal subsidies and price discounts. A dual-mandate central bank would have acted in prevention, cooling the economy and helping the interest rate and prices return to normal conditions.

Finally, the dual monetary mandate does not represent a threat to monetary independence because the central bank will still have the freedom to decide how to pursue its goals, and its decisions must not open space to any government branch to reverse[17]. This is precisely the reason of why the dual monetary objective has to be a constitutional mandate, where growth becomes an explicit rather than an implicit goal.

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