RECENT DEVELOPMENTS IN THE POLITICAL BUSINESS CYCLE (*)

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First of all let me thank you for inviting me to come here, and I'm very honored to be a special speaker here. It's my first time in Montevideo, and of course, then, my first time at the Central Bank. I do have though a bit of a connection because my grandmother lived here some 60 years ago for 4 or 5 years. Though I don't known if she was at the Central Bank, and I'm sure she never discussed the political business cycles, but that is what I want to discuss today.

What I want to do today is do two things; one is to give somewhat a review and a critique, this critique is partially based on my new book, on my book on political economy, but updated, and then to present some new research which grows out of this critique.

In the last 25 years, there has been a significant amount of work on political business cycles, meaning political determinants of macro economic cycles. The paper that probably started this new interest in the political business cycle is Nordhaus´s famous model on opportunistic pre-electoral manipulation, when policy-makers, when incumbents manipulate the economy before elections to increase their chances of re-election. Soon after there was another type of model due to Hibbs, of a post-electoral cycle due to policy-makers having different macro economic goals, what is known as a partisan cycle, and then there is a subsequent work by Alesina, for example, using this partisan cycle with rational expectations.

So the question I want to start with is what is our current state of understanding of political business cycles, what have we learned, and on what points is there agreement and on what points is there still significant disagreement.

* Versión corregida por el autor.

And what I'm going to argue in the first part of my talk is that all of these models, all of these first-generation models, models based on manipulating the economy via monetary policy are unconvincing, both theoretically and empirically. And instead, I think we should focus on explanations based on fiscal policy. Because explanations based on fiscal policy will conform much better to the data, and they also form a stronger basis for a convincing theoretical model of the electoral factors of economic outcomes.

As I go on in the talk I will discuss exactly how monetary and fiscal policy fit together and in fact that is going to be focus, that is the focus in my research right now and I hope to convince you of what the new generation of political business cycle models should look like.

So let me start out with a discussion of this first-generation monetary-based PBC (Political Business Cycle) models, and these models, in their various forms, have three basic equations. First of all, there is an equation that describes economic activity, some sort of Phillips curve. In this version here x is actual output relative to potential, and the idea is that economic activity depends on unanticipated inflation. If actual inflation is above expected inflation, then there is an increase in economic activity. So that is the first type of equation.

The second basic component of all these models is a loss function which is used differently in different models. But the basic loss function, is quadratic on deviations of both output and inflation with respect to a target and, what is more important for our purposes, there is a weight Gamma put on output fluctuations relative to inflation fluctuations, a point to where we are going to come back to.

So, in the basic Nordhaus model, this loss function represents the loss that voters assign to economic fluctuations. This loss function determines how they vote; voters vote retrospectively. Depending on what the curve variable loss is and perhaps the previous period, they decide whether to vote for the incumbent or not, and hence the incumbent has an incentive to manipulate economic activity. Price inflation will increase economic activity, and perhaps move it up closer to the target x´ and reduce the expected output loss.

In the partisan's model of Hibbs and Alesina, this loss function is used differently. The loss represents the preferences of a partisan policy-maker; so policy-makers can differ in their output and inflation targets or in the relative weight they put on output and inflation fluctuations.

And then the third aspect of this, the thing that ties it altogether, is some model of formation of expectations. In the basic Nordhaus model, expectations are adaptive. That is very important for the working of the model. Hibbs has a similar story. Alesina's innovation here is to put in rational expectations where in the first half of the term, expected inflation, which was formed before the election, depends on the probabilities of the left-wing party winning the election versus the right-wing party winning the election, and their different inflation targets. That is the basic model.

I am going to raise a number of questions both about opportunistic and partisan models. There are some problems that are common to these models, and I think that is the main reason why in the end we need to reject the basic monetary approach. Two basic criticisms are, first of all, that in the monetary-based models it is assumed that the incumbent executive, the President, the Prime Ministers, controls monetary policy. So in the opportunistic model, for example, if the President wants to get re-elected he increases money growth in a surprising manner. The problem with this is that this notion that the incumbent executive controls monetary policy is inconsistent with our notions of an independent Central Bank.

The Central Bank is a separate body than the executive and the politician, and in the models that I'm going to argue we should be using, a centerpiece of those models is the separation between politicians and the Central Bank. I'm sure that is an idea which would find favor in this audience, probably in many others as well.

The second basic criticism of these monetary-based models is the central role given to monetary surprises with fiscal policy playing a minor role in the determination of economic activity. And this is not descriptive of political cycles, of what we observe happening in economies before elections, the fiscal policy which is increased, nor is it descriptive of how we now view the macro economy working. We no longer believe, if we ever did, that monetary surprises are the driving force of economic fluctuations.

So there are these general criticisms and I'll get back to them. There are also some specific criticisms.

Let us start with the Nordhaus model. I am going to spend most of my time, most of my talk, on opportunistic models, because that is where my research is. The prediction of the Nordhaus model is that the government stimulates the economy by expansionary monetary policy right before an election, and economic activity rises due to unanticipated money growth. Then after the election what does government do? The government reverses its course and engineers a recession by a contractionary monetary policy to bring down inflationary expectations; so inflation expectations fall. So, when the next election comes the government can play the same trick.

First of all, this leads in addition to the previous criticisms to a basic conceptual criticism, that the Nordhaus model and models like it rely on voter irrationality, and voter irrationality not only in the formation of expectations, but also on how voters choose to vote.

In the Nordhouse model we have these continued cycles. Voters have lived through these cycles. If they see economic activity rising before an election and they believe it is manipulation, they should vote against the incumbent rather than for the incumbent.

The second basic problem with the Nordhaus model is that it just does not fit the empirical facts. What we find in the US and in many other countries is that there is no strong evidence of a pre-electoral boom in economic activity. However, we find some of the monetary predictions of the Nordhouse model are correct. In some cases we see an increase in inflation elections. We see evidence of a pre-electoral increase in money growth, and I'll also argue in transfers, before an election.

Let me just make these points more specific. What I do in the background paper where I talk about a number of empirical regularities. Regularity Nº 1, which is the basis of all the opportunistic models, is that in many countries, for example, the US, aggregate economic conditions before an election, such as per capita output, have a significant effect on the voting patterns. That is why there is an incentive to manipulate the economy.

However, as I said before, Regularity Nº 2, there is no significant pre-electoral increase in aggregate economic activity prior to elections, either in the US or on OECD countries. We just do not see the aggregate cycle that the Nordhouse model predicts and relies on. However, Regularity Nº 3, in many OECD countries there is a clear post-electoral increase in inflation. In the US there is evidence of such a post-electoral increase in inflation prior to 1979, from 1960 to 1979; but no evidence thereafter.

And then, related to that is Regularity Nº 4, where there is evidence of a pre-electoral increase in money growth rates in many countries. In the US we saw such an effect or pre-electoral effect from 1960 to 1980, but none thereafter. And moreover, when we look at this more carefully, and this is quite crucial, what we see is we see a cycle in monetary aggregates, in money growth rates, but we do not see an electoral cycle in the federal funds rate.

To put the same point in another way, we see a cycle in many countries in monetary aggregates, but we do not see a cycle in the instruments of monetary policy such as interest rates on borrowed reserves. That is a crucial point and I am going to come to it.

To continue this critique before I summarize, if we look at Alesina´s rational partisan model, the prediction of the model is that there will be lower unemployment and a higher inflation under a left-wing party than a right-wing party in the first half of the term. Expectations have to be formed approximately two years before. So, in the first half of the term, expectations are formed before the election, before we know who is going to win the election. So a left-wing victory means that inflation is higher than was anticipated, and that is good for economic activity. A right-wing victory means that inflation is lower than was anticipated. However, in the second half of the term, there is no difference, because then expectations are formed knowing who has won the election.

Well, there are a number criticisms of this as well. Conceptually it turns out the model has a number of problems. As I said before, as another problem, there is reliance on monetary surprises as the main driving force of economic activity which does not square well with how we view the economy working; but there are some specific problems.

The Phillips curve, the first basic equation in Alesina's model is explained by workers signing contracts before they have full knowledge, so for the first half of the term the reason we get this effect is that workers sign contracts before the election; but the problem is, if you look at a country like the US, the election day is known. What that means is that uncertainty about election outcomes is a major source of economic fluctuations. And there is a simple solution: either sign state contingent contracts or simply postpone the signing of contracts until after the election, when uncertainty about outcomes is resolved. And in fact there is some evidence, for example a work by Carpenter and Glazer, that shows that in many industries contract signing is postponed until after elections when there is really a problem of electoral uncertainty.

But, if I postpone the signing of contracts until after elections, so contracts are signed only when we know the outcome, then the whole reason that there is a cycle disappears. So, it is a rather serious criticism.

Moreover, this model predicts there is going to be a positive correlation between the extent of the electoral surprise and the size of the post-electoral movement in real economic activity. If the election outcome is very well known before the election, then contracts will take that into account, even if they have to be signed before the election, and hence there will be no strong increase in economic activity after the election if the left-wing party wins, for example, because that was fully predicted.

If you look at the data for the US, what one finds in fact is that in many cases the elections that showed the largest increase in economic activity after a democratic victory were the ones that were the most easy to predict. For example in post-War US history, the largest increase in economic activity after an election was in the 1964 election, the Johnson election, which is also one of the most certain elections that there ever was. In contrast, in the 1968 election, that was one of the closest elections there ever was, the Alesina model would predict with the Republican victory in 1968 there should be a very large recession. In fact, under Republican administrations in the US the post 1968 recession was one of the smallest of a Republican administration. And sure the model just does not fit the facts in that respect.

Just to summarize, what we find here is: a) There are clear differences in economic activity under Democrats and Republicans, economic activity

being higher under Democrats than Republicans. b) This partisan effect is strongest in the early part of the term. However, even though the economic activity data fit the model, the inflation evidence is not favorable. Democratic administrations in fact have a lower average inflation rate than Republican administrations in the first half of their terms. Just the opposite of what the model would predict.

So I want to summarize that, with two regularities.

1) Regularity 5: there is a clear partisan effect on economic activity in the US, with economic activity being significantly higher under Democrats than Republicans in the first half of their terms. I stress this because it is one of the most robust findings in the political business cycle.

But, Regularity Nº 6, there is no consensus on the role of monetary policy on inflation surprises on driving partisan effects, and the views on this vary quite widely. Another is we have a strong fact, but we do not have a good model to explain it.

So to sum up, and to return to some of the partisan models, they have clear monetary policy effects, but a political business cycle model based on monetary surprises engineered by politicians is neither theoretically nor empirically satisfactory; fiscal policy plays an important role, especially in many developing countries in pre-electoral manipulation.

So we found this in the US from 1960 to 1980, and we find this in many, many countries and the importance of fiscal policy in developing countries is extremely strong. So where does this leave us? We have two basic issues. Let me start with Number 2 first.

Number 2 is that we have some monetary effect. How can the monetary effects that are observed be made consistent with the political business cycle model driven by fiscal policy? What I am going to argue, and I am arguing in my current research, is that what we have is an independent Central Bank accommodates political pressures on monetary policy during election years, in order to prevent sharp movements in interest rates and in order to deflect criticism. So what I am going to talk about in just a minute, the active-fiscal passive-monetary model.

And then the other question that one can ask, which I am not going to concentrate on today, is if fiscal policy is important, why the rational voters respond to pre-electoral manipulations? Just to summarize this, one set of arguments is that voters have imperfect information about the candidates' characteristics and hence, what appears as a sign is taken for a fact, because they lack relevant information about the candidates running for office.

What I want to stress is that these two questions, which I think are the central two questions, are independent questions. And what I am going to do is concentrate in answering number 2. That is, and I think this is quite interesting from the point of view of a Central Bank. Without answering the question why there are fiscal policy shocks before elections, what exactly it does in terms of voting behavior, one can ask the question: if a Central Bank realize that before elections there will be expansionary monetary policy, how should monetary policy respond, and how in fact can we explain the interaction between politicians and the Central Bank.

This approach is what I call the active-fiscal passive-monetary model. Fiscal policy is active, monetary policy accommodates. That is why we see the difference between money growth rates and interest rates. So what I would like to do is go over some of the details of the model.

The idea here is that we have an incumbent politician running for re-election and that incumbent politician has some control over fiscal policy. The Central Bank controls monetary policy and once again I want to stress what is key to the model, I think what should be key to all our current models of understanding the political business cycle, is the separation of policy authorities. And that is in sharp contrast to the existing models. And it is the interaction between a fiscal authority and a monetary authority which are separate bodies. The interaction between them determines the nature of the political business cycle.

And what we are going to see is that in equilibrium the monetary authority will accommodate the politicians' desired policy in an election year but will be free from political influence in non-election years.

So, let us look at some of the details of the model. The real side of the economy is modeled not by one but by two equations. There is an aggregate supply curve which looks similar to before, with two differences.

This is a forward-looking Phillips curve, what is sometimes called a new-Keynesian Phillips curve. That is going to be crucial. And then there is an aggregate demand equation; higher real interest rates, lower economic activity. And then there is also a demand shock. The demand shock has two components: IID demand shock, and then there is the government spending shock. This political shock, we will see, will differ between election and non-election periods.

The electoral structure is quite simple but it turns out even a simple structure is difficult to solve. Elections are held every other period, so we can talk about an "e" period, an election period, and an "o" period, an off-election period or non-election period. And there are two key things here which work in opposite directions in a sense. First of all the setting of monetary policies depends on whether we are in an e or an o period. And the nature of the equilibrium depends on the expectation that an e period will be followed by an o period which will followed by an e period, and so on and so forth. There is this constant switching back and forth, and in order for this equilibrium to use the game theoretic term, in order for this equilibrium not to unravel, we need this to be an infinite sequence.

The other way that is important is that in any period policy depends on next period's inflation. Remember the form of the supply and the demand curves, and next period's inflation depends on the following period's inflation, which depends on the following period's inflation, and so on and so forth. If I have a horizon, that is going to be very hard to solve, especially because in an election period we are going to have two regimes. We are going to have a regime of full accommodation and a regime of partial accommodation and which regime we have depends on the current realization of shocks, and if I look forward I have to look at our future shocks.

It turns out the way that we one can solve this is by assuming that supply shocks are also IID rather than serially correlated, and that will give the basic results that we have an interaction between the monetary authority and the fiscal authority, that differs between an e and an o period, but we'll have also forward looking behavior in electoral and non-electoral periods in ways that I'll make clear.

How do I model political pressure? Well, what I assume is that the politician can threaten the Central Bank with a private cost c, this is the

standard game theoretic technique. So if the Central Bank follows its desired policy rather than the policy that the politician wants, the Central Bank's loss is LCB + C, and that too is going to be affected at some periods, getting preferred policy. However, this political pressure works only if it is not applied too often. In other words, if it is used selectively it will be effective; but if the politician applies pressure period after period, it would be ineffective. Specifically what I assume is that political pressure will generate a Central Bank response making future pressure less effective.

More specifically even a response by the Central Bank today makes political pressure tomorrow ineffective. There is a cost to the Central Bank of responding to political pressure. So the way that the politician is not going to apply political pressure every period, the Central Bank will not respond with a complaint every period if it knows that it may not be subject to pressure in the future.

So let me try as much as possible to give you some flavor of the model. This gets to be quite complicated. But the idea is as follows: we have a Central Bank loss function, equation III, which is the same quadratic form as before. Now because we have a supply shock there is an optimum output and an optimum inflation response.

Suppose there is a supply shock that output rises partially in response and inflation partially falls to offset. That implies an optimum interest rate response and the thing to notice in the optimal interest rate rule is that the supply shock, is partially offset but the demand shock is fully offset. If there is a demand shock the Central Bank's first best policy is to raise interest rates so that demand shock has no effect on economic activity.

How are we going to make this a political model? We are going to work as follows. The incumbent politician also has a loss function, equation Nº VII; but that loss function differs from the Central Bank's loss function in two respects. The loss function that the politician cares about is the voters' loss function. First of all, voters put a higher weight on output fluctuations than the Central Bank. And the other thing is that whereas the Central Bank had a x=0 target, remember x is the deviation of output from the potential, voters have a different target, and this is one of the novel aspects of the model. That depends on the demand shock.

If there is, for example, a positive demand shock, voters would want this to be partially accommodated. That accommodation of demand shocks, think back to the Central Bank's interest rate rule, will lessen the response to demand shocks.

Then, some stuff that I have added. The politician has two parts of his objective function. First of all he wants to minimize the voters' loss function.

The second thing he cares about is the probability of being re-elected, and increasing g, government spending, increases the probability of being re-elected.

In an election year the politician cares both about social welfare and his probability of being reelected, while in a non election year he only cares about social welfare.

This has implications on both fiscal and monetary policy. What this means in a non-election year, since fiscal policy shocks have a cost but no electoral benefit, optimal fiscal policy in a non-election year, in an o period, is equal to 0; whereas in an election year he wants a fiscal policy shock, because that increases his probability of re-election.

Notice that both in an election year and in a non-election year the politician cares about the voters' loss function, but in an election year he cares about the voters' loss function for two reasons: the social welfare reason, the first term here, and the electoral reason, the re-election reason, the q function; whereas in a non-election year the second term here I am pointing to there is only that first argument.

So in both an election and a non-election year, the politician wants to minimize the loss that voters face from economic fluctuations, but there is a higher weight on minimizing the loss in an election, in an e period than in an o period. That is going to be the second driving force.

In order to make this not too complicated what I decided to do is the following. I am going to look at a special case where I am going to shut off one of these important effects on monetary policy and simply look at one of them. Specifically what I am going to assume for a special case, that the only way that the Central Bank and the politician differ is in the

weight put on supply fluctuations and output fluctuations: the politician puts no weight on demand fluctuations. In that case, expected inflation in future periods is going to be equal to 0. The idea is that if the politician does not want the Central Bank to accommodate demand shocks, and if demand shocks and supply shocks are both IID, then expected next period's inflation is always equal to 0. We'll come back to that.

The politician's first best election-year monetary policy is of the same form of the Central Bank's but with a smaller output response and a larger inflation response to a supply shock. Remember that voters want less output fluctuations than the Central Bank.

The Central Bank either follow the politician's policy and assigns a value to it according to the Central Bank's loss function, or it could follow its first best policy, and then suffer a cost of c. So if the politician wants the Central Bank to follow a policy that is too far from its desired policy, the Central Bank would prefer to follow its desired policy and suffer the cost c. This is what we mean by full versus partial accommodation. When the politician's first best policy is close enough to the Central Bank's policy, the politician gets his first best.

When the supply shock is very small, the difference between the Central Bank´s preferred policy and the politician's preferred policy is small. However, when the supply shock is either too large or too small those differences are quite large. And hence we choose a compromise policy, which is the best policy the politician can get, subject to the constraint that the Central Bank's loss is the same under the compromise policy as under the Central Bank's preferred policy with the cost.

To put this in bargaining terms, if it helps you, in this bargain the politician gains all of the rents. It turns out that this compromise policy has a very simple form. The compromise policy is equal to the Central Bank's preferred policy, let's say for inflation, plus or minus a constant.

What about non-election year policy? What I am going to argue in a few minutes is that the Central Bank in a non-election period simply, in the simple model, follows its most desired policy, and we have this difference between non-election year and election year. And in a non-

election year, as I'll argue in a few minutes, the politician puts no pressure on the Central Bank.

About this general case, when the politician also cares about accommodation of demand shocks, when he wants some accommodation of demand shocks what it means is that in an non-election year and the period before an election we have the expectation that in the following period there will be a demand shock which will be partially accommodated and that will affect expected inflation.

So, policy in a non-election year will depend not only on the supply shock but also on expected fiscal policy in an election year. And hence, in an election period, the politician's desired policy will depend on the demand shock both directly, because he wants it accommodated, and also by expectations. Which regime will get in an election period full accommodation or partial accommodation will depend on the realization of the shocks.

So the basic idea that we have here is that expected future demand shocks will also matter in non-election years. The Central Bank chooses monetary policy; there is no political interference on the Central Bank in a non-election year; but expectations of accommodation in the following year, during the elections, will affect economic policy during non-election years. To repeat, why? Because in a non-election year the Central Bank has forward-looking inflation expectations, knows there will be accommodation in an election year and chooses monetary policy accordingly, even if there is no election.

What is the equilibrium interaction between incumbent politicians and the monetary authority? Well, the basic idea here is that in an election year, the Central Bank accommodates the incumbent politician choosing either full accommodation or partial. Why? Because there is a threat by the politician, which doesn't actually have to be carried out, because the Central Bank accommodates. There is no counter-pressure from the Central Bank. In an "o" period the Central Bank is allowed to choose his preferred policy; the politician puts no pressure on the Central Bank and the Central Bank does not have to respond with a complaint. The key point in deriving this equilibrium is that the politician does not put pressure on a Central Bank in non-election years. Why? Because he wants to save the pressure for election years.

If he puts on pressure on a non-election year and the Central Bank starts complaining, pressure in an election year, when it is more important to the politician, will be less effective.

Formally, what one does here, is, for those of you who are interested, one proves this. We find what is called "a sub-game perfect equilibrium" and show that this equilibrium is robust.

Let us go back to the empirical work. What does this imply? What does this sort of model, imply about money growth in election years versus non-election years?

Well, remember we had an interest rate rule to close the model. Money market equilibrium determines money supply consistent with the interest rate, and to understand how this goes, let us consider a hypothesis. Let us suppose that the parameters are such that the politician prefers no interest rate movements in response to demand shock in election period. That is, the politician puts such a strong weight on… output fluctuations, that what the politician wants is the interest rate to remain constant in an election year, full interest rate smoothing. Let us see what that implies.

We have a fiscal cycle. In an election year, Goverment spending is higher than in a non-election year because it helps the politician to get re-elected. A high value of Goverment spending in e relative to o. In order to keep the interest rate constant that high value of Goverment spending, that demand shock, even though it is fully anticipated, induces a sufficiently high increase in the money supply to keep the current interest rate constant. From the demand equation, from the IS curve that we had, keeping the interest rate constant means we have a constant level of economic activity in the face of this expansionary fiscal impulse.

So, what do we see? We see a political cycle which is driven by fiscal policy, but because of accommodation by the Central Bank we see that interest rates are constant, consistent let us say with the US data; output is constant, as we saw in our critique on the Nordhaus model. There is no cycle on economic activity. Why? Because the Central Bank is accommodating. Where do we see the cycle? We see the cycle in monetary aggregates. Why? To keep interest rates constant. So we see a monetary cycle in monetary aggregates, but no active cycle in the interest rate.

This is the essential empirical characteristic of the AFPM model, and it is in this sense that this model, that stresses the interaction between monetary authority and politicians, not only makes more theoretical sense, because it really looks at the institutional characteristic of central banking, where the President, where Bill Clinton couldn't call up Allan Greenspan and say: I want Gore elected, increase the money supply, as Greenspan would just slam the phone down. What do we see? We see however that in election years, because of interest rates smoothing as desired to deflect criticism, we see the fiscal cycle having an effect on the money supply but not a strong effect on interest rates or economic activity.

Finally, looking at empirical testing of this, let me just run through the basic ideas. One of the countries that I'm looking at, one of the main countries, is Colombia because they have what appears to be a fiscal cycle, more on the local level, we are collecting data about an independent Central Bank. What are the three things we look for? We look for the characteristics of the political monetary cycle, passive monetary aggregates versus active interest rates or other tools of control. To the extent we see a passive cycle but not an active cycle, that is consistent with the model we saw in the US, as I mentioned, from 1960 to 1980. The second thing we look for is the relationship of the monetary and the fiscal cycles, does the latter, does the fiscal cycle help explain the monetary cycle? There is some evidence of that for the US in 1960-1980. And the third thing, which is a relatively new thing that I'm doing, both on the theoretical and empirical level, is to the extent that we look at these institutional characteristics, how much pressure politicians can put on the Central Bank? How much the Central Bank has to respond?

We want to look at the relationship between the characteristics of the cycle and this connection between monetary and fiscal policy as a function of the degree of Central Bank independence.