POLITICO-ECONOMIC TRANSITIONS: EVOLUTION AND GROWTH[*]

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Abstract

A theory that provides intuitive understanding of a process as complex as simultaneous political regime transition and growth in economic income would be a valuable addition to Political Science. In this paper, I attempt to provide such an explanation by employing simple insights from evolutionary game theory and developing their application to politico-economic transitions by borrowing freely from various other bodies of literature including economic growth, spatial voting models, and comparative politics. The result is a theoretical frame that comfortably deals with transition as a relatively smoother dynamic and provides some explanation for how regime transition might occur. It also provides an example of a learning strategy for politicians, which generates the credibility required for successful economic reform and a rationale for democratization.

I. Background

Abstracting from a possible western bias or any disdainful connotation, it is perhaps instructive to see economic and political reform as evolution – from a less developed primitive stage of being to a more developed advanced stage of existence. Economic growth and the politics of regime transition then become the science of studying this evolutionary dynamic. There is little need to suggest the charisma of such a topic. Everyone has a horse in the race and excitement is high about who will make it and who will not. There are swashbuckling economic advisors, the meanest of 'secondary property rights enforcers', the slimiest of corrupt politicians, the most pitiable of the downtrodden, the most intrepid and the most opportunistic of entrepreneurs – the whole nine yards. Nevertheless, and perhaps even more than evolution from a biological perspective, while there is a strong feeling among many scholars that there is indeed a unifying method to the madness (that there is indeed sense in looking at a composite dual transition), an overarching integrated "theory of evolution" for economies and polities in transition eludes us. We have made progress through answering some difficult questions about many of the specifics, but we simply do not have enough understanding of the big picture to provide anything close to a single evolutionary theory of politico-economic transitions.

For this paper then, the following observations provide the impetus. It is now commonly acknowledged in the economic growth literature that convergence in economic income of all countries to the same high-income group of homogenous countries will not happen unconditionally no matter how much time we allow the

laggards to catch up.[10] We know in addition that, *ceteris paribus*, we can expect two groups of countries to form in the limit – one high-income group and one low-income group – with any middle-income groups simply disappearing.

We also know from the economic development literature that economic growth is closely related to sensible and credible economic policy. It is an established truth – to the degree that major international institutions base their very existence on it – that certain policies cause dismal economic performance and yet others are correlated with better performance. There even seems to be some consensus that these policies are self-reinforcing and hence countries that adhere to one set of policies or the other are lumped together in the so-called vicious-cycle or virtuous-cycle. In this literature, an inordinate amount of emphasis is placed on credible commitments and much has been written about it. Credibility can be studied in numerous ways. If it is a public good that one can free ride off of and accumulate, then all the well-known problems of public-good provision are immediately relevant and we are in familiar territory. A point of interest here is that the accumulation of credibility is a process. The net result is interesting in that one might have credibility or no credibility with the concept of having some credibility becoming less relevant in the limit or in a steady-state equilibrium, where having no credibility is a Nash equilibrium in the transition game just like the low-income group or the vicious-cycle members.

What is more is that one can argue that having no credibility or belonging to a low-income group can be seen, *ceteris paribus*, as a stable evolutionary strategy –

one more reason as to why nonconvergence is more likely to characterize the world than convergence. This characterization of credibility makes it a pivotal element of the story and links the political and the economic in a manner that reduces necessity of the term "dual transition". The problem now is to be more explicit about where the credibility is coming from – providing a sort of credibility capital production function for the political sector of the unified economy in transition and consequently how it is being accumulated. Figure Two below is a simplified diagram of a possible solution to this crucial problem suggested in this paper.

More formally, I suggest here that the theory of evolutionary games is illustrative and I provide an example of an evolutionary game that produces the credibility I seek and conforms to a number of established facts about politico-economic transitions. In an evolutionary game, at the start of time, we would have in the world a homogenous group of 'animals' or phenotypes – countries in our case. A natural genetic function then determines the relative fitness of an animal defined quite simply as the rate of change in overall population representation of the animal group. In the case of countries and credibility in particular, we are interested in assessing learning strategies instead of the genetic function, which in effect provides for an estimation of relative fitness over time. This can be achieved by looking at the role of credibility capital in spatial voting models and the degree to which political entities like parties, which tend to exist across a variety of regime types, internalize it in their strategy of playing a political game.

The purpose of this project is to provide a causally connected theory between the mechanics of the political regime and the resulting economic income of a state and to therefore propose a logically consistent and valid causal explanation for the interplay between regime

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[10] Of course, another way of saying this is that we have some idea as to what some of the relevant variables might be for increasing a country's national income.

change and economic growth in a kind of general equilibrium framework thus devising a unified theory for politico-economic transition in the process. To achieve this, I introduce evolutionary game theory. The reason for doing so is that it provides a very convenient and simple way of looking at the dynamics of the system and neatly incorporates the political processes we are interested in with the economic outcomes that are observed.

The structure of this paper is as follows. First, I discuss briefly the key elements that I use for the purpose of this paper and suggest their relevance in the unified theory I intend to present. More comprehensive reviews of much of what I outline already exist and thus the discussion here is kept minimal. Second, I elaborate on the theory of transitions that I favor and suggest its implications. Finally, I conclude with some observations and remarks about possibilities for further research.

2. Preliminary Discussion
2.1 On Economic Growth and Development

In the economic growth literature, in a series of articles, Quah (1993, 1994, 1996) and Bernard and Durlauf (1995) among others have suggested fairly recently that, in per capita income, countries do not all necessarily converge to a point (actually, to be exact, a stochastic steady-state) at some eventual time in the future like many before them had argued (see Solow (1956), Mankiw, Romer and Weil (1992), and the idea of unconditional convergence by Barro (1991, 1999), Barro and Sala-i-Martin (1992, 1999) and Sala-i-Martin (1996)). Instead, they might form clubs of convergence. In fact, to be exact, just two clubs – a club of high-income countries and a club of low-income countries with any middle-income groups simply vanishing over time as the system approaches steady state. While there

is convergence within those clubs the system on the other hand is characterized by divergence. As to exactly what causes this surprising outcome is not entirely resolved in the economic growth literature and remains somewhat of a puzzle.

Separately in the development economics literature, Rodrik (1989, 1992), Calvo (1989), Dornbusch (1990, 1993), Garrett (1998) and Dixit (1992, 1993) among others have suggested that countries undergoing economic reform (without much attention to regime[11]) face a polarized outcome too. Unreformed countries form one group and reformed ones form the other. Those countries that are reforming must credibly suggest their sincerity to the domestic private sector and foreign investors in order to successfully jump from one group to the other. If reform is seen as fleeting or 'incredible' then distorted incentives will cause capital flight, mobile capital investment (which is less complementary with long-run growth), intertemporal substitution in consumption and so on which is likely to hinder the progress of reform. The credible commitments idea then gives us the virtuous vs. vicious cycle theory.

It is easy to see that these two strands of literature are obviously closely related. Simply, the idea is that virtuous cycles are virtuous for the reason that they reinforce economic reform, which eventually leads to higher growth; it takes no far stretch of the imagination to see that these countries are liable to be the ones that form the high-income convergence club. Likewise, the low-income convergence club is composed of the countries facing a vicious cycle of pathetic reinforcing economic performance, which in steady state should be a stable group if the cost of reform outweighs those elusive benefits accrued even in the slightly longer run

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[11] Although Rodrik grants that democracy can be seen as a meta-institution for economic growth.

that initially tend to be a significant component of the lure towards reform.

2.2 On the Political Front

In comparative political science, Przeworski and Limongi (1993, 1997) and Leblang (1997) have reminded us - reflecting the frustration of the field - that while we know political institutions matter for growth in some broad almost ineffable sense, we are in no position to suggest that specific political regimes matter other than that we have a strong hunch that democracy matters. This is a dismal state of affairs and not much has changed since the late 1990s. Geddes came to the same conclusion in a 1999 Annual Review of Political Science piece, as did Heo and Tan, the authors of an article published in 2001.

This begs the obvious question - Why do political institutions matter? Consider one simple explanation for why institutions matter for economic growth. To start with, I hope most will agree, following Douglass North's seminal work, that they suffer – or benefit, depending on what their position on the root scale economies curve would suggest – from path dependence. That this path dependence then, in the limit, would create a tendency to reinforce a virtuous or a vicious cycle is also probably not that contentious a claim to make. In fact, it would then actually indicate why steady states of convergence clubs might be 'steady' in the sense that one would not expect their composition to be changed by club members extricating themselves from one club and joining another. The costs of such a change, which even if bounded, become prohibitively high as the club approaches steady state precisely because of path dependency, and can therefore be seen as a situation of transaction costs (of institutional change) superseding benefits.

This would provide a foundation of an explanation for why democracy might matter for economic growth if democratic institutions systematically produce 'virtuous path dependence'. What is more is that the economic convergence story can be modified by a cost function rooted in political institutional embeddedness (which need to be endogenous to the model) that maps out the probability of a successful transition depending on temporal distance from the steady state outcome within the respective club compared to the position of the other club along a similar dynamic.

In figure one, it is obviously more likely for a successful transition to occur at time *Ta* than at time *Tb*. A formal model based on the story I have provided thus far on political institutions engendering credible commitments (or accumulated credibility capital) that then generates virtuous-cycle or vicious-cycle path dependence and finally convergence clubs will, in my opinion, be a huge step forward in our understanding of transitions.

Figure One: A Possible Time Path for Convergence Clubs
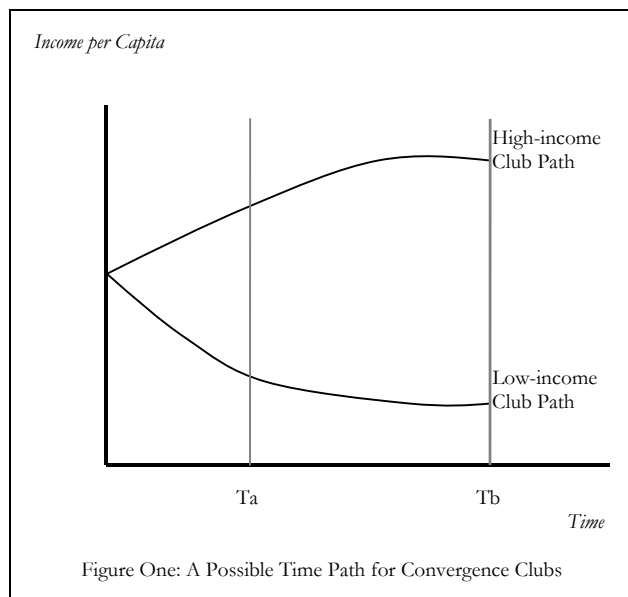
So far so good, but here is where things get murkier. Geddes reminds us that any relation of regime type (specifically democracy) to growth evades us. Superficially, if we allow that path dependence exists in institutions, then, if we can knit a story about the relative type and relative proportion of political institutions that characterize a democracy of quality x, say on a scale from 1 to 10, as opposed to another regime, then we can fiddle with the amount and direction of path dependence to suggest where convergence through virtuous cycles is coming from. Alas, our task is more complicated. Pierson (2000) recently advised us on using the term path dependence carefully lest we might fall prey to the monster of conceptual stretching who smiles beamingly upon political science. In similar vein, in a recent article Alexander (2001) too throws a spanner in the works by suggesting that democratic institutions do not embody

anything special that provides them with extra path dependence in the first place. Economic institutions that deal with property rights are more susceptible to path dependence he argues than are democratic institutions.

There is some merit in this argument. Some very astute political scientists from the American politics tradition have argued why this might be the case.[12] Shepsle and Weingast (1984a) argued that public sector institutions should be evaluated on the basis of self-interested actors facilitating evaluation of public-sector institutions like their private-sector counterparts. McKelvey and Ordeshook (1984) then support the suggestion that when rules engender political constraints that lead to results that are not to the liking of politicians, they (political groups) are able to bypass such constraints. They are unable however to support a stronger version of the hypothesis that institutions are therefore subservient to political actors to the extent that they can permit certain equilibria not to obtain in spite of original institutional design and of course this is what Alexander is worried about. To this, Shepsle and Weingast (1984b) answer that rules have consequences and therefore politicians are indeed interested in them in accordance with their preferences. They believe that the first hypothesis is necessary and the second fails because a sufficient condition is not met – that of Coasian transactions costs. If these are incorporated, then we find that certain institutionalized procedures are more susceptible to manipulation by motivated politicians than others.

Note here that Shepsle and Weingast's assertion serves to only bolster our position that costs increase as transitions approach steady states since transaction

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[12] Though public choice theorists like Niskanen (rent-seeking bureau), Brennan and Buchanan (private contract-enforcing rents), and so on have long recognized this.

costs approach a level high enough to dissuade more and more efforts at institutional change and in fact provides good grounding for modeling the institutional path dependence dynamic. The link, however, between these transaction costs with an explicit political process has yet not been provided and without that link all we have is a rather good story for divergent outcomes. I will return to this point below and indeed this is a motivation for this paper. First, however, I make some finer points in the story clear.

2.3 On Hope and Doom

We are arguing that from an economic convergence (to convergence clubs) standpoint the situation progresses towards one where extrication becomes prohibitively expensive. This can be construed as a doom story for it provides reason for why divergent outcomes are stable (and the 'steady-state' terminology does nothing to dispel the impression). The confusion comes from the fact that we are looking at ceteris paribus conditions or a situation of unconditional convergence where the state's behavior does not diverge wildly from the past. This is a very important point. Transaction costs will probably take care of slight deviations in behavior for instance a politician that is slightly more interested in leaving a legacy compared to exploiting his office than his predecessors or an autocrat in a particularly good mood. Wild deviations, like an autocrat dying and a strong reformist backbencher suddenly rising to power or a severe economic shock creating adverse terms of trade causing a drying up of reserves and a subsequent financial crisis allowing the IMF to come thundering through the front door, dramatically change the conditions and may indeed force the country on to a credible virtuous cycle and therefore convergence to the high income club. So,

simply, what we are not suggesting is that such economies desperately seek to extricate themselves and are nevertheless hapless.

A punctuated equilibrium process might well be at work here where institutional redesigning (through shock therapy, gradualism or whatever) disturbs the country's path to steady state and consequently the relative cost of extrication from the group. Then, within the tatonnement process of the punctuated equilibrium time period – where equilibrium is defined simply as the adjustment to a path to either one of the convergence clubs – incentives of relevant actors are significantly altered. This then is an opportunity for change since, in equilibrium, individuals should be attracted to the institutions that best serve their needs. Talent is reallocated efficiently in equilibrium and utility is maximized. If we allow that the reallocation of talent is vital to furthering marginal political reform and consequently economic growth then extrication from the vicious-cycle group becomes more possible. This is a vital component of an explanation for how stubborn path dependency can be overcome.

2.4 On Parties and Political Regime

Thus far the emphasis has been on explaining economic outcomes using the concept of path dependence in political institutions, albeit in a manner I think provides more meaning to the political sector in equilibrium analysis than the extant literature in comparative political science achieves. However, it does little to incorporate regime-type variables. This, as I will argue more comprehensively below, can be done by exploiting the parallel literature in political science on convergence to the median voter's bliss point or preferred position in an issue space.

The first principles of political convergence are simple. In a Downsian spatial voting model with two parties, single-peaked preferences and perfect information both parties converge to the median voter's bliss point through iterated reaction function competition in a tatonnemont process. What happens when information is incomplete or parties have policy preferences that differ from each others' and from the median voter's bliss-point defined platform? What happens when electoral rules differ? Alesina and Rosenthal (1995) provide a good basic analysis. They show that we can get policy divergence. The analysis gets infinitely more complicated with more than two parties and issue cleavages based on orthogonality principles. Some very recent advances are being made in this field that provide predictions about the degree of divergence. What is material here however is that a useful parallel to convergence clubs exists in this literature and is even more nuanced than the simple high-income/low-income convergence clubs that the economic growth literature offers. I directly exploit this in my discussion below and it forms the basis of my argument as summarized in Figure Two.

For instance, Person and Tabellini (2000), building on some high-quality work by Myerson (1993), Ferejohn (1986) and Lizeri and Persico (2001), argue convincingly that PR regimes and large district sizes are theoretically characterized by more rent seeking, larger government sizes and more broad-based public goods than are presidential regimes and smaller district sizes. Likewise voting among party lists in PR and small district magnitudes with high barriers to entry attracts low talent (due to the possibility of free riding) and could consequently engender lower economic growth. (See Murphy et. al., 1993 for instance.) So does institutional redesign with PR and small district magnitude necessarily doom the punctuated equilibrium to the low-

income convergence-club steady state path? Obviously, as McKelvey and Ordeshook remind us, these neat and simple predictions need to be tempered by the incentives of the relevant actors within the matrix of political institutions they are operating in and the marginal changes they are able to effect to it. I hope that at least some will be convinced that an evolutionary game-theoretic approach, like the one I outline below, provides such a theoretical frame rather neatly.

For the purpose of illustration, one such important political institution can be considered – parties. The reason I select parties are several. First, they are institutions that face substantial potential for path dependency emanating at the very least from the stability of partisan identification over time (see Lipset and Rokkan 1967; Green and Palmquist 1990, 1994; Mair 1993) but also due to more proactive marginal changes that endogenize partisan identification. After all, why is it that advanced countries have higher partisan identification than developing ones? Mobilization theory – whether cleavage-based or cognitive – is glaring evidence of this, and is, broadly, a concept of crucial significance in a theory of politico-economic transitions. The cognitive mobilization literature (Zaller, 1994 for instance) makes the claim that parties are able to influence voter preferences by effectively broadcasting the party message. The problem therefore with Converse's (1966) learning model to some degree is that it assumes only reactive political institutions. Second, parties are political institutions with a more direct connection between the private sector and the public sector and necessarily operate at an intersection of the two. Formally, the literature (like Ferejohn and Noll, 1978 and Calvert, 1985) looks at the party's expected utility from a policy position as an additive probability function of the value it ascribes to its own policy platform and that of the opponent. If one assumes that the allocation of

talent across sectors is important for economic growth and political institutional transformation, then this necessitates looking at both sectors anyway. Third, parties exist across political regimes and therefore concentrating on them and not the regime itself saves us from being included in the Hall of Shame type list that Przeworski and Limongi drew up containing research endeavors attempting to provide a causal connection between political regime and growth by sorting on regime type variables. Parties almost always exist in democratic regimes barring some exceptions Anckar and Anckar (2000) mention in their engaging Comparative Political Studies article. Even in non-democratic regimes they appear to be permanent fixtures - like the National Unity Party of Burma, Zhong Guo Gong Chan Dang of China, CPSU during the Soviet Union, Niyazov's Democratic Party of Turkmenistan and the Democratic Front for the Reunification of the Fatherland in North Korea.

Before I continue with this example using parties, it is instructive to ask the following question - How is political convergence to the median voter (or divergence to party-defined bliss points) as I outline above related to convergence in economic growth within convergence clubs and divergence in the global system? One simple answer lies in the theory of credible commitments. On the economic front, we know that credible commitments by governments (to economic reforms at the least) have immediate and serious repercussions on economic growth. On the political front, the task then is to explore where credibility (accountability being a key manifestation) originates from and how it can be developed by political microfoundations.

2.5 On the Theory of Evolution

John Aldrich (1995) has conveniently answered the question for me about the relevance of parties. Although he obviously does not suggest any real explanation for why parties might be relevant in making a connection between the credible commitments argument and economic growth, he does provide three extremely strong reasons for why they are important. The three reasons that Aldrich suggests why parties exist are, first, to solve an Arrovian-type social choice problem, second, to overcome a collective-action dilemma in providing public goods and finally, third, to provide solution to the ambitious politician's problem of satisfying career-politics needs. These reasons are the final piece of the puzzle we need to knit together the whole story thus far provided into a unified theory on politico-economic transition.

Let us start from the observation that divergence from the median voter's preferred outcome is obtained (like Alesina and Rosenthal argue for instance) if there exists value for the party in making credible commitments to party-defined bliss points different from that of the median voter, say, to reward party loyalty. The dilemma is then obvious if party politicians should make credible commitments, which is – assuming certain regularity conditions hold - reconciling convergence to the median voter (and its social welfare maximizing attributes) with the value inherent in divergent outcomes (i.e. rewarding politicians that make credible commitments).

It is useful to bear in mind for this discussion that there are, as Przeworski and Limongi have noted before, two distinct median voters - one relevant for the political game and one for the economic. And that there is an incompatibility between market based 'voting' done by economic agents using the resources they own to derive their 'weights' compared to state-backed voting by

citizens where weights are likely much different (and theoretically more equal). The median voter therefore for 'capitalist' or market-based transactions is not the same as the one in a 'democratic' universal suffrage political regime.

What is interesting however is that a "theory of evolution" for political groups like parties can be created that reconciles these two median voters within the same game and in the process also rewards the divergent outcomes that produce credible commitments. Parties induce public spiritedness among their followers (a process some have dubbed creating a "warm-glow effect" in explaining why people vote and also in location theory) by providing broad-based public goods. The public nature of these goods causes parametric shifts towards the median voter from both sides albeit possibly at different rates depending on a number of factors.[13] For example from Perrson and Tabellini's work one can argue that plurality rule and small district size produces this faster than large districts and PR. We can however preclude the inevitable homogenization by a single group this process will suggest (in the style of a non-democratic single-party regime on a virtuous cycle) by introducing diminishing marginal utility to the public good it provides. This prevents a natural (though obviously not an "imposed") extinction of other parties. The process uses Buchanan's optimal group size theory to allow other groups to capitalize on the opportunity as well

provided their public good package is of a different more desirable type. We can also allow this package to differ, and consequently enable an expansion of the optimal group size, by allowing provision of specific selective incentives to identifiable allied interest groups (subsidies, transfers, pollution licenses, etc.).[14] This allows the group to delay the point of inflexion on its aggregate provided utility surface and these special interests become important to this extent.[15] The schematic in Figure Two below summarizes this example where a party seeks to win an election as well as effect a policy desired by an allied interest group. It achieves both goals by providing a package of generally desirable public goods and selected benefits only for its affiliated interest group. The public and non-partisan nature of public goods engenders a general push towards the median voter for
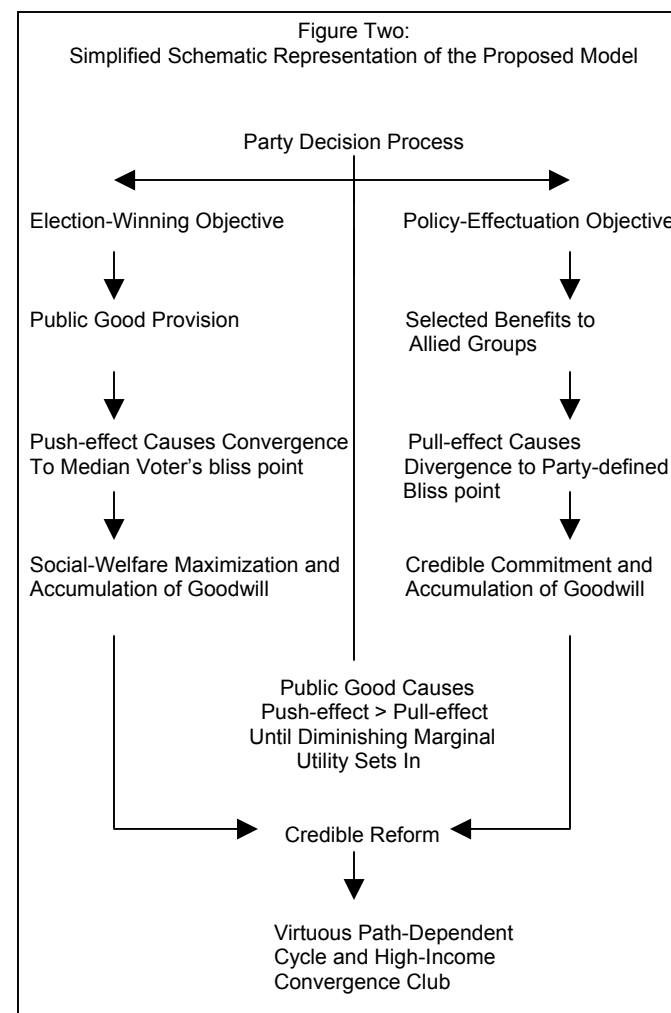
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[13] The type of public good is of course of obvious importance in the analysis. Schultz (1996), for example, discusses a situation of two parties attempting to provide public goods that may or may not be desired to the same extent by the electorate. Using a model of Bayesian updating along the equilibrium path, he suggests that non-revealing equilibria (concerning true costs) result when there are parties with polarized preferences and revealing-equilibria obtain when at least one party's preferences coincide with the median voter's.

[14] It is illustrative to note Acemoglu and Robinson (2001) suggest political transitions and the subsequent stability of the regime depends crucially on the degree of asset equality among the electorate. Through their emphasis on mass revolution and elite reaction, they find consolidated democracies have more asset equality, which causes fiscal stability, and less incentive for a dissatisfied electorate to tip the boat.

[15] It is interesting that McFaul (2001) asserts that party development depends more proximately on the institutional choices made by relevant political players. He also notes in conjunction with party development in Russia that the party system in Russia is yet not in equilibrium and a more stable party system may develop provided some institutional changes are made. The theory I provide here explains his suggestions rather well. Institutional choices would determine the rates of convergence to the median voter by the political group and also the degree to which it can make selective incentives to allied interest groups. It is no surprise then that political agents should be interested in the specific institutions chosen during transition so that they have more direct control over the degree to which rates of convergence can be manipulated.

the entire electorate while the private nature of selected benefits pulls allegiance back towards the party's preferred position. The effective execution of this strategy allows the party to accumulate a stock of credibility - through both public and partisan channels - thereby facilitating successful economic reform by being seen as credible. The probabilistic association of non-democracies with low income in this setup is clearly a result of a slower generation of credibility capital by the political elite as one of the channels of accumulating credibility (i.e. the election- winning objective) being effectively truncated.

This process also provides a tractable understanding for the endogenization of the median voter position itself like mobilization theory suggests. Although it is perhaps overly simplified – as will be explained below in our treatment of the learning strategies provided to us in spatial voting models – we have now a unified explanation couched in social choice theory that employs public good provision by political parties to provide an explanation for credible commitments and convergence to the median voter's bliss point in stochastic steady state.

Figure Two:
Simplified Schematic Representation of the Proposed Model

Party Decision Process

Election-Winning Objective   Policy-Effectuation Objective

Public Good Provision   Selected Benefits to
                                        Allied Groups

Push-effect Causes Convergence   Pull-effect Causes
To Median Voter's bliss point   Divergence to Party-defined
                                        Bliss point

Social-Welfare Maximization and   Credible Commitment and
Accumulation of Goodwill   Accumulation of Goodwill

Public Good Causes
Push-effect > Pull-effect
Until Diminishing Marginal
Utility Sets In

Credible Reform

Virtuous Path-Dependent
Cycle and High-Income
Convergence Club

3.   Modeling the Dynamic

In order to look at these elements of the story as a cohesive evolutionary theory of transition some terminology of evolutionary game theory can now be introduced. As suggested at the beginning of this paper, at the start of time in an evolutionary game, we have a world of a homogenous group of 'animals' or phenotypes. Natural genetics then determine the relative fitness of an animal defined quite simply as the rate of change in overall population representation of the animal group. The "final" distribution of animals provides us with the evolutionary stable strategy or strategies (known as the ESS) with all other possible strategies getting systematically eliminated.

Evolutionary game theory is most interesting in a game theoretic setting and provides intuitive understanding of strategic behavior in repeated-play games. Of particular interest to us in this paper is the polarized economic performance of countries and not so much interaction between countries. Specifically, in steady state, *ceteris paribus*, memberships in high-income and low-income clubs appear to be the two unique evolutionary stable strategies.[16] What is therefore of material relevance to us here is the genetic encoding as it were that determines this outcome. Obviously, there is little merit in talking about genetics with countries apart from perhaps issues such as resource curses and maybe even absolute size and location of territory. In the age-old nature versus nurture debate, we prescribe to the nurture thesis, which is why we must take refuge in the *ceteris paribus* condition when talking about the

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[16] This is precisely what Quah's Markov Chain Quartile transitions experiment attempts to demonstrate as it studies what the distribution of countries looks like over a long period of time.

process of convergence and the membership of convergence clubs. Therefore, instead of genetics we are interested in rational learning strategies instead, which, in turn, we believe must be intuitive and sophisticated at once. Any learning strategy that leads to low-income club membership for the country and pathetic economic performance should be just as rational as another that leads to high-income club membership and fantastic economic performance.

3.1 An Example of an Evolutionary Game

To understand better how evolutionary game theory logic can be applied to the kind of problem we are interested in here, consider the game shown in Figure Three below. The two players, politicians and the populations they represent, as collective entities, can choose to either undertake or support economic and political reforms or not to reform at all. Let the sum of the payoffs they consequently receive determine the nation's income. The two pure Nash equilibria of this game are of course (Reform, Reform) and (No Reform, No Reform).

Figure Three: An Evolutionary Game

	POLITICIANS	
POPULATION	*Reform*	*No Reform*
Reform	10,10	5,9
No Reform	4,6	6,12

When no reform is taking place the politicians are able to benefit disproportionately perhaps through inefficiently designed property rights leading to corruption and other forms of intervention in private sector activity. If, from this equilibrium, either player "mutates" and chooses to reform and the other does not concur then that player

loses more than the other does. Only when both players want reform can reform occur successfully. Obviously this sort of game is, very generally, a common framework we come across with in political science.[17]

From an evolutionary perspective the resistances of the equilibria of this game are important in considering its stability. Specifically, the resistance of (Reform, Reform) against (No Reform, No Reform) is 3/5 and the resistance of (No Reform, No Reform) over (Reform, Reform) is 2/5. What this means is that unless more than a two-fifths or forty percent of the total respective populations of the players want to reform, the country will be stable at the unreformed outcome. Similarly at least three-fifths of the reformers must want to reverse reforms for the equilibria to switch to the "inferior" outcome, evaluated so of course in normative terms and not strict Pareto criteria. Although it need not always be so, in this game the superior outcome is also the risk dominant outcome. It has been shown that the long-run equilibrium of such a game tends to coincide with the risk-dominant equilibrium due primarily to a specification of the process of mutation, which, in turn, can be significant over longer periods. (Kandori, Mailath, et. al. 1993)

3.2 On the role of Mobilization

Lipset (1959) has famously argued that democratic tolerance norms are required for democracy and that a reciprocal relationship that fosters free participation is vital. Huber, Rueschemeyer, and Stephens (1993) reaffirm its importance and suggest a more nuanced analysis based on the role of the state, the impact of transnational entities, but most importantly relative class power, which directly dictates the degree of political participation. Shin (1994) masterfully reviews the extensive literature and also suggests that commitment to democracy is one of the most crucial components for successful democratization. There is then little debate then over the relevance of committed political participation for democratization and thus any politico-economic transition theory should include it in a clear manner. An evolutionary game-theoretic approach, even as simple as the example provided above, can do so through emphasis on the thresholds that the resistance criterion suggests. Resistances provide parsimonious and intuitive understanding for why participation is crucial, why democratizers need to mobilize, and why its resisters need to be cautious of the size of their opponents.   What such an approach also does is incorporate a separate observation made most recently by Przeworski, Alvarez, et. al. (2000) that authoritarian regimes have a higher population growth rate than do democracies and thus lower per capita income. In my view, their most convincing explanation of this fact is borrowed from Becker, Murphy and Tamura (1990) who suggest that in countries with higher human-capital acquiring resources, it makes sense to invest more resources into fewer children and emphasize quality over quantity since human capital is accumulated with increasing returns.[18] A theoretical framework that lends some intuitive understanding as to why demographics are important in politico-economic transitions simply

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[17] A long line of literature talks about such a negotiated transition game. Some of the most notable are perhaps Rustow (1970), Przeworski (1991), Casper and Taylor (1996) and the concept of a focal point in Weingast (1997)

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[18] Note that their puzzling over democratization and economic development continues since this explanation uses and does not explain their carefully formulated observation that the occurrence of democracies is correlated with higher economic income.

does not exist and an evolutionary game-theoretic approach once again appears to be a constructive avenue. Threshold maintenance (or increasing the resistance of a Nash equilibrium) can happen either by increasing the population or by thwarting participation. If participation increases (in a positive way if it is democratic or in a negative way if it is exclusionary and to the benefit of a select few like in an oligarchy) the only way the current outcome can remain with a higher or equal resistance is if the opposing class of players increases its numbers. Here obviously a new debate emerges. What is more effective – increasing the group's numbers or its efficacy? In a highly repressive authoritarian regime this point may not be debatable since efficacy can be kept in check. Hence, Przeworski's and his coauthors' result would obtain. But it can also obtain through other sources and hence the fertility literature, income inequality literature and mobilization literature are all relevant in sorting out the exact causal mechanism. The unifying theoretical frame however is this hidden calculus of group fitness – a "hidden calculus" perhaps like the famous pool shark who "knows" how to solve complex physics and geometrical problems without really knowing how to.

This sort of analysis lends some additional theoretical grounding to the top-down and bottom-up approaches to democratization efforts that have emphasized either the role of mobilization of democratizers and demobilization of anti-democratic movements or both. Mobilizing, by its tradition in collective effort games, seeks a critical threshold or, as the n-person coordination games describe it, a tipping point. The concept of resistance of Nash-equilibria in a game like the one depicted above, in my view, provides an intuitive understanding for what is really happening underneath it all. A major problem with this approach is that it analyzes a single game – that of democratization or that of economic reform. If we are interested in looking at a learning strategy that specifies how changes or mutations are produced over time, it is perhaps more constructive to analyze a series of nested games for they would give us richer understanding for why a given amount of mutations occur. Here again the democratization literature in political science is of immediate relevance for it suggests what exactly these nested games might be. We feel that it would be erroneous to simply look at the distichous process of the largest and substantively most significant game when the mutations carry us over the critical threshold as it were.

3.3 On the Learning Strategy

A possible learning strategy, one that we are proposing here, relates primarily to the behavior of politicians and the political institutions they belong to, but directly incorporates the effects of their electors or, more generally, their supporters. This is done by marrying the theory of clubs and the multidimensional spatial voting model – the former provides a measure for how political entities interact with their environment and consequently how they change with it while the latter links political entities with their supporters in a dynamic setting using the basic principles of political competition. Together they provide an explanation for how the evolutionary process might work. A brief discussion of this link follows.

Buchanan's (1965) theory of clubs pertains to groups that provide a semi-public good. This is an impure public good that, though excludable, is non-rival only a certain extent beyond which sharing it decreases utility to the existing group members. As a matter of fact, marginal utility to existing members of an additional member to that point increases at a decreasing rate. Obviously this neatly determines the optimal size of the group. One

such semi-public good might be the brand name or credibility capital as it were of the group. In political groups such as parties, we can assume that participation in the group is at least valuable for this reason alone to politicians. What is instructive here is that the concavity of the relationship posited – due perhaps in this context to diseconomies of scale setting in through membership – engenders a need for a membership rule. The organization structure of the group (or its "hierarchy") accomplishes this by providing legitimate roles for members and effectively curtailing illegitimate membership. It is thus not surprising that admission to the hierarchy of a political group such as a party is often based on a sort of voting system irrespective of the regime it operates within. Of course we do not dispute that the nature of candidate selection in Zhong Guo Gong Chan Dang of China is less "democratic" than it is in the Social Democratic Party of Germany, but of material relevance to us that it is "democratic".

This facilitates analysis of transitions of political groups (and by extension of the economy and polity) using a similar underlying logic as was outlined in the section above titled On the Theory of Evolution and summarized in Figure Two. The logic introduced there can be restated in more general terms by introducing the more formal language of multidimensional spatial voting models.

In the spatial voting model literature, the geometric concept of a yolk pertains to the circle of minimum radius that intersects all median hyperplanes of ideal points distributed in the issue space. For our purpose here it can therefore be understood as simply a measure for the degree to which the electoral system possesses the ability to generate outcomes different from what the median voter would desire – the smaller the yolk the lesser the chance of an undesirable result being obtained. What is important is not the dispersion of ideal points that generates the yolk, for, depending on the configuration of ideal points, even more dispersed ideal points can produce a smaller yolk. (Miller, et. al. 1989) Instead, once we grant the assumption common in much of the literature that politicians want to stay in power and political groups wish to perpetuate themselves, it is the number of ideal points represented that becomes important, and in this manner the idea of mobilization remains crucial in the learning strategy being suggested.

This assumption is also crucial to the development of the concept of a finagle point with minimum finagle radius – a point on the issue space, which when chosen by a politician enables her to beat any competitor by changing her position to a new point that beats the competitor without hurting her credibility with her supporters. Using the construct of a finagle circle, situated within the yolk, with a minimum finagle radius much smaller than that of the yolk itself, Wuffle et. al. (1989) show that as the number of voters increases, the finagle radius becomes increasingly smaller than the radius of the yolk.

This provides the foundations of a rather sophisticated learning strategy for politicians that has in it a number of ingredients identified as being important in analyses of regime dynamics. A fuller development of this or other, perhaps better, learning strategies is however necessarily subject for future research. Some remarks are nevertheless in order. Economic reform enables higher growth. Reforms however do not work unless they are credible. Where then does credibility come from? If politicians want to stay in power, they cannot change positions indiscriminately and this automatically lends them credibility through the channels suggested in Figure Two. This is the fundamental defense that politics has from protecting itself from chaos (in the style the global-cycling theorem might suggest). Credibility is the constraint, but the maximand is the political objective,

whether we analyze parties in general or the individual politician in particular. The essentials remain unchanged. The politician's objective of winning an election yields a learning strategy - to locate himself in a position like the finagle circle with minimum finagle radius that is defensible from an attack by a competitor with minimum loss of credibility with his supporters. The credibility capital that he consequently obtains allows his party to employ this accumulated credibility towards its own brand name to effect economic reform with more success. The learning strategy presented here simply provides the workings for Figure Two at the level of an individual politician rather than the party he or she belongs to and is therefore more general in nature.

4. Concluding Remarks

As most politico-economic transition theorists would probably attest, a theory that provides intuitive understanding of a process as complex as simultaneous political regime transition and growth in economic income would be a valuable addition to political science. In this paper, I have attempted to provide such an explanation by employing evolutionary game theory and developing its application to politico-economic transitions by borrowing freely from various bodies of literature including observations on convergence from economic growth, contributions in the spatial voting model literature that employ geometric analysis and the literature on development and democratization in comparative politics. The result is a theoretical frame that comfortably deals with transition as a relatively smoother dynamic process and provides some explanation for how regime transition might occur. It also provides an example of a learning strategy for politicians, which generates the credibility required for successful economic reform (and subsequent higher

growth) and a rationale for democratization. However, the analysis is necessarily incomplete and a fuller analysis, though essentially warranted, would require more space than I have. One natural extension of this analysis would be its application across more distinct political systems by devising underlying learning strategies similar in nature to Tsebelis's (1995) institutional veto players, which in turn agrees rather well with the analysis in this paper.

I end with the hope that transition theorists will employ evolutionary game theory in their work for the flexibility and simplicity it provides towards building of a more systematic and cumulative research enterprise for the study of politico-economic transitions in political science.

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