LEARNING FROM SHOCKS AND THE DECISION TO OPEN

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LEARNING FROM SHOCKS AND THE DECISION TO OPEN

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Abstract: Two claims pervade the literature on the political economy of market reforms: that economic crises cause reforms; and that crises matter because they bring into question the validity of the economic model held to be responsible for them. Economic crises are said to spur a process of learning that is conducive to the abandonment of failing models and to the adoption of successful models. But although these claims have become the conventional wisdom, they have been hardly tested empirically due to the lack of agreement on what constitutes a crisis and to difficulties in measuring learning from them. I propose a model of rational learning from experience and apply it to the decision to open the economy. Using data from 1964 through 1990, I show that learning from the 1982 debt crisis was relevant to the first wave of adoption of an export promotion strategy, but learning was conditional on the high variability of economic outcomes in countries that opened up to trade. Learning was also symbolic in that the sheer number of other countries that liberalized was a more important driver of others' decisions to follow suit.

Key words: Economic Crisis, Policy Reform, Trade Liberalization, Learning, Coercion, Emulation.

1. Introduction

Do crises cause economic reform?[1] According to much of the literature on the topic, there is evidence that countries reform when confronted with adverse economic conditions. Recessions, hyperinflations, and big fiscal and external deficits are likely to open the door to reform by triggering particular mechanisms that remove obstacles and opposition to policy change (Nelson, 1990; Grindle and Thomas, 1991; Haggard and Kaufman, 1992; Bates and Krueger, 1993; Haggard and Webb, 1994; Nelson, 1994; Williamson and Haggard, 1994).Yet the so- called crisis hypothesis faces theoretical and empirical challenges.

Theoretically speaking, the hypothesis is considered by some to be tautological and unfalsifiable. As Dani Rodrik (1996) put it, if a crisis is a case of extreme policy failure, there is nothing remarkable about policy reform following a crisis. It is as predictable as smoke following fire. Thus, there is nothing to explain. Other authors contend that there is something to explain if extreme economic hardship alone is conducive to reform. But why do economic conditions have to be not just bad but very bad for a government to undertake reforms?

In this paper, I focus on a particular mechanism linking very bad economic conditions to the probability of reform. According to some authors, a period of deep economic disarray leads to a reassessment of the mapping from policies to outcomes. Politicians hold particular beliefs that contain explanations of good and bad economic results. However, "every now and then, something happens that does not fit the previous image – something that shakes our Bayesian faith in what we used to think" (Harberger, in Tommasi and Velasco, 1995: 18). A period of deep economic disarray is a good candidate for precipitating a loss of faith in the current economic model. Economic crises lead to reform because they question the validity of the economic model employed up to that moment. This is precisely the mechanism that I test here.

The "crisis hypothesis" faces important empirical challenges too. The most obvious is how to operationalize the notion of "crisis". It is striking that a hypothesis that constitutes the conventional wisdom in the policy reform literature has hardly been tested cross-nationally. Most evidence concerning this hypothesis is based on interesting case studies that offer useful but ultimately anecdotal evidence. Overall, as Drazen (2000) states, econometric studies that test it are just as rare. This paper contributes to filling the empirical gap.

I focus on the role that learning from the 1982 debt crisis played in the abandonment of the import substitution strategy of development (*ISS*) and the subsequent adoption by a good number of developing countries of an export promotion model (*EO*). I use rational updating to model learning. In particular, in a rational framework shocks are modeled as an increase in the uncertainty of the beliefs that politicians hold about expected outcomes. If governments hold very definite beliefs about what outcomes will follow particular policies, their incentives to scrutinize the evidence are minimal. However, if crises increase politicians' uncertainty about what to expect from policies, then politicians will be more attentive to actual outcomes. In turn, if the results point overwhelmingly to the superiority of one of the policy strategies, a change in policy is predicted as long as politicians choose policies rationally. To the best of my knowledge, this is the first paper that treats learning empirically in a cross-national setting as the mechanism that mediates between economic crises and policy reform.

[1] I use the expressions "policy reform", "policy change" and "policy switch" interchangeably to refer to the adoption of market reforms.

According to the results, the 1982 debt shock and ensuing recession do explain the abandonment of the *ISS* and the decision to open up. Moreover, learning from this shock is somewhat relevant to explaining the policy switch, whereas simply learning from others' experience under alternative models of development is not. The increase in the uncertainty of policymakers' beliefs resulting from the 1982 debt shock made them more attentive to evidence that in turn pointed to the average superiority of *EO* over *ISS*. However, learning is only from the experience of the *region* a country belongs to. Also, average growth figures hide a very high variance in growth results under *EO* and *IS*, which reduced the probability of a quick switch. Moreover, not all of the learning was rational: symbolic imitation or herding on others' behavior was an important element of the decision to liberalize the trade regime. These results constitute a novel contribution that meets the challenge of operationalizing, measuring, and testing the impact of learning across time and space.

The paper proceeds as follows. In section 2, I briefly review the literature on economic crises and economic reform, with especial reference to *EO*. Section 3 explains how crises can be modeled in a rational updating framework. In section 4, I discuss the empirical application of rational updating to cross-national data, the variables, and the results. I conclude in section 5.

2. Economic Crises and Economic Reforms

The crisis hypothesis comes in two versions. According to the first version, bad times (economically speaking) are a necessary condition for governments to launch economic reforms. According to the second version, only *very* bad times induce reform. A good number of edited volumes that review the reform experience of many developing countries show that economic disarray is at a best a necessary condition for policy reform; but rarely is it a sufficient one. A crisis may trigger the sense that something needs to be done. Yet taking action depends on whether policymakers have the political capacity to do so. In turn, political capacity relates to the type of political regime. If the regime is a dictatorship, political opposition to reforms can be repressed and institutions more easily circumvented. If the regime is a democracy, political capacity depends on the size of the political mandate and the ability of the incumbent party to assembly a coalition in favor of reform (Williamson, 1990; Haggard and Kauffman, 1992; Nelson, 1990, 1994; Keeler, 1993).

As mentioned in the introduction, the first version of the crisis hypothesis has been considered to be, in general, uninteresting. Yet some scholars consider that the second version of the crisis hypothesis – that countries have to be in *deep* trouble to reform – contains an interesting puzzle. However, solving the puzzle requires some consensus on what constitutes *very* bad economic conditions as opposed to just *bad* economic conditions.

The few authors who have addressed this issue operationalize a crisis as deterioration of some economic variable above or below a particular threshold or against some previous figure. For example, according to Tornell (1998), a crisis exists if a country's inflation rate is 40% or more and it has increased by 125% or more from the previous year. Tornell also considers a decline of GDP per capita by more than 18% relative to the previous year as an indicator of crisis. Another relevant macroeconomic variable is the balance of payments. In this case, an economic crisis is deemed to exist if a country's level of international reserves is less than the equivalent of three months' worth of imports. Alternative operationalizations can be found in Drazen and Easterly (2001). These authors look at inflation, the black market premium, the growth rate of GDP per capita, the current account deficit, and the public sector deficit. These indicators are roughly similar to those used by Lora (2000) in his study of economic

reform in Latin America. Finally, another very used indicator of crisis has to do with abnormally strong market pressures for currency depreciation (Leblang, 2003).

By which mechanisms can *deep* economic crises facilitate reform? The answers to this question are closely related to the parallel studies on inaction and delay of reforms (see Drazen, 2000, for a summary). In these studies, the basic idea is that vested interests block policy change. Yet, if the status quo deteriorates to the point where it is obvious that everybody loses if it is perpetuated, then reform is possible. An alternative view of inaction emphasizes that policy reform may be blocked due to *ex ante* uncertainty about who the winners and who the losers will be in the post-reform scenario (Fernández and Rodrik, 1991). But again, in the midst of deep and persistent economic trouble (for instance, in a hyperinflation), it is certain that everybody loses if stabilization is not undertaken. Thus, deep crises increase state autonomy. All these plausible arguments have been formalized but they have been rarely tested (see Tornell, 1998 for an exception, and Lora, 2000 for a discussion on the mismatch between theory and data).[2]

Note that these approaches to the study of the impact of bad economic conditions on the probability of reform link crises with an increased *capacity* for action. A deep crisis can reshuffle vested interests, thus facilitating action. But what determines the *content* of the response? If crises enhance governments' autonomy to act, governments' beliefs about what is to be done ought to be crucial to understanding policy choices. Crises create opportunities for change by increasing state autonomy. State autonomy creates the capacity to implement policy choices. But the content of those policies is at least partly determined by policy-relevant knowledge.

Deep crises generally come with some diagnosis of what causes them. In this sense, the diagnostic conveys some policy content, at the very least, about what should be avoided. I argue that the mechanism that relates deep crises to the *content* of the response is learning: the content of the response is the outcome of a process of updating beliefs about which policies do work and which ones do not work (learning). What a deep crisis does is to question the validity of the economic model seen as responsible for the crisis. As Tommasi and Velasco (1995) put it, crises lead to a realization of how costly some previous policies were and to a reassessment of the economic ideas that connect policies to outcomes. Politicians' beliefs about the "right" model of the world do not change frequently. Yet a deep economic crisis can alter those beliefs, leading to a process of social learning (Kahler, 1990; 1992).

The empirical tests of the impact of crises on a wide range of economic policies provide results as diverse as the definitions of crises. Drazen and Easterly (2001) report that hyperinflation and extreme values of the black market premium are indeed followed by reforms.[3] Lora (2000) finds that a falling per capita income is the best predictor of his index of reform (which includes privatization, trade, financial, tax, and labor reforms). He also reports that, in particular for trade reform, the best proxy of crisis is the rate of decline of GDP. Both effects are small in magnitude, though. On the other hand, Milner and Kubota (2005) find no significant impact of falls in GDP per capita, inflation, or the balance of payments on the probability of trade liberalization. Overall, it is hard to compare these results or to draw any clear conclusions from them: not only do the definitions of crises vary but the measures of trade and financial liberalization, the samples, and the periods are not comparable.

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[2] An alternative perspective linking very bad economic conditions with increased probability of reform is based on the postulates of prospect theory (Weyland, 1996). According to this cognitive approach to decision making, politicians and the public have different attitudes toward risk depending on whether they are in the so-called domain of gains or domain of losses. A very deep economic crisis places politicians and the public in the domain of big losses, which in turn induces them to take the risk of launching reforms. Reforms are considered to be a risky choice for politicians given the anticipated unpopularity of austerity policies. However, reforms have been sometimes accompanied by boosts in politicians' popularity, not the opposite (Stokes, 2001).

[3] The authors suggest that public sector deficits and bad external accounts attract foreign aid rather than spurring reform.

2.1 Economic Crises and Development Strategies

As I have just observed, deep crises come with some diagnosis of what causes them. Thus, a prescription follows about what should be avoided and what implemented if some successful policy alternative exists. The 1982 debt crisis that the Mexican moratorium inaugurated was considered to be a financial crisis with origins in deep macroeconomic imbalances. Given this diagnosis, the emphasis was placed on stabilization policies to get the macroeconomic fundamentals right and on structural policies aimed at reducing what was considered to be excessive state intervention, in turn responsible for the macroeconomic chaos.

Under *ISS*, countries like Brazil and Mexico achieved high rates through the mid 1960s. After that, chronic balance of payments crises, increasing public deficits financed by creating new money or recourse to external indebtedness, subsequent inflation, and rent-seeking led to the belief that *ISS* had outlived its initial purposes. This perception was accentuated by the parallel experience of the East Asian Tigers. Singapore, Hong Kong, South Korea and Taiwan grew at impressive rates while Latin America stagnated. The success of the former was attributed to the adoption of a strategy of export promotion, in turn inspired by the Japanese experience. *EO* – accompanied by selective intervention – promoted growth, even during periods of economic hardship.

The evidence was not ignored in policy circles. Enrique Iglesias, former president of the Inter-American Development Bank, contended that "the ideas developed in the North during the Reagan–Thatcher era were very important in Latin America, but the Chilean experience was far more significant in so far as it provided a viable model. The success of the Chilean experience was very much noted by other regional leaders" (quoted in Williamson, 1994: 493-494). Miguel A. Rodríguez, president of the Venezuelan central bank, stated that "economists and policy makers in Latin America saw the per-capita income growth of the Asian countries over the past twenty years and become more and more convinced that the opening of the economy was the best way to produce a real transformation in Latin American societies" (quoted in Williamson, 1994: 377). Arriagada and Graham (1994: 282) contended that, in Chile, which is considered to be the Latin American tiger, short-term populist strategies were discredited by "the chaos in neighboring countries, [which] made macroeconomic restraint much more politically palatable." According to Jadish Bhagwati (1985: 41) "[m]any developing countries learned the hard way by following IS [import substitution] policies too long and seeing the fortunate few pursuing the EP strategy [export promotion] to do much better. Perhaps learning by others doing and one's undoing is the most common form of education." Based on the contrasting experiences of Latin American and East Asian countries, *EO* became the accepted orthodoxy and with it the misleading idea that the state is a drag on economic development (Sachs, 1985; Wade, 1990; Westphal, 1990; Rodrik, 1996; 2003).[4] Thus, the debt crisis opened a debate about alternative development strategies, as a result of which *EO* was actively promoted by the International Financial Institutions (IFIs) and launched in many developing countries.

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[4] It is undeniable that the East Asian countries performed remarkably well. But the extent to which this performance can be exclusively attributed to reliance on export promotion is uncertain. Country stories show that *EO* was adopted amidst a very particular constellation of historical, social and political factors. A closer look at countries' experiences reveals that the story of the East Asian miracle was simplified in several aspects. For instance, the *ex post* reading of the East Asian success as primarily the result of the withdrawal of the state overlooks the fact that there are different types of state in terms of size, strength and autonomy, as well as different forms of state intervention. The experience of South Korea with selective intervention and infant industry promotion shows that reducing the bias of the regime may require active state involvement, not the opposite. The most recent cases of India and China also reveal that the best development strategy is one in which export promotion is combined with temporary import protection and considerable doses of state control of the opening process. It is true that the Latin American experience showed that state failures could be disastrous; but the East Asian experience does not establish that markets alone are enough to succeed. Yet in policy circles success was interpreted as clear evidence of the virtues of the market, in contrast to the failures of the state. Accordingly, policy recommendations of neutral development regimes came with broader recommendations to dismantle state intervention. This has been an unfortunate confusion, for it is one thing to promote exports, which was crucial for the East Asian success, and a very different thing to advocate a minimal role for the state, which was not.

Evaluating the results of these alternative development strategies is complicated by the fact that good measures of them, with their many dimensions – average tariffs and their dispersion, quantitative restrictions, export subsidies, tax credits, degree of exchange rate overvaluation – are rarely available in a systematic and comparable way. Also, one has to decide what specific outcome may be relevant for politicians who want to learn about the consequences of alternative development strategies. I will take growth to be the outcome of interest for policymakers (Bresser et al., 1993).[5] In Stiglitz's view, "(…) there is by and large a consensus among economists – based on a wealth of studies – that trade liberalization brings significant economic gains (…)" (1998: 35). However, the empirical evidence on the relationship between openness and growth in developing countries is positive (Wacziarg and Welch, 2003) but weak (Frankel and Romer, 1999). Moreover, a thorough review of recent literature by Rodríguez and Rodrik (1999) challenged the conventional wisdom that lower barriers to trade are positive for economic growth, arguing that, in fact, little is known about the relationship.

To make an argument based on learning from policy outcomes, it is crucial to have a sense of what that actual experience was in terms of economic growth under both development strategies. The figures below rely on data on development strategies from the World Bank Report (1987), which provided a list of developing countries classified under moderate and strong *EO* and moderate and strong *ISS* before and after the 1973 oil crisis.[6] These data were complemented with IMF data on trade liberalization in the developing countries in the 1980s (1992; 1994). The database covers 51 developing countries in Africa, East Asia, South Asia and Latin America between 1964 and 1990, amounting to a total of 1,341 country-year observations.

Figure 1 shows the average rates of growth in the sample for the period of study under one and the other development strategy. As it is possible to see, on average countries under an *EO* development strategy performed better than countries under an *ISS* throughout the period. In particular, for the purpose of this paper, it is interesting to emphasize that the average rates of growth of countries under *EO* during the period following the 1982 debt crisis were better on average than the rates of growth of those countries under *ISS*. The average rates of growth under *ISS* reached their trough in 1984, that is, two years after the debt crisis broke. Actually, it is important to stress that some countries' initial response to the crisis was to increase protection. The governments of Brazil, Peru and Argentina adopted heterodox stabilization policies that soon collapsed, contributing to the learning process about the failure of excessively interventionist policies (Edwards, 1995: 41-59). In the database, overall rates of growth were 1.18% for the 957 country-years under *ISS* and 3.13% for the 384 country years under *EO*. It is true that rates of growth were on average higher under *EO* than under *ISS*, as Figure 1 shows. However, it is important to stress that the good performance under *EO* seems to have been exclusively an East Asian phenomenon. In this region, even under *ISS*, rates of growth were remarkable. Moreover, the growth figures were outstanding in the region also in the crisis period 1974–85. But a comparison with outcomes outside East Asia suggests that high growth was rather specific to this particular location. This fact is important to understand the results below.

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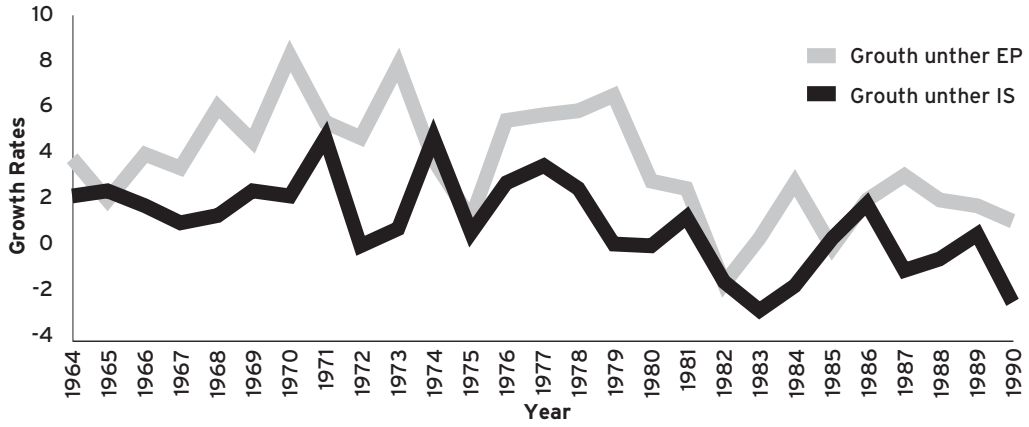
[5] Politicians may want to learn about other policy outcomes: for instance, the rate of unemployment, inflation, or the public deficit. The model can be easily extended to those outcomes.

[6] These data is not free from problems. For instance, Brazil is somewhat surprisingly classified as having a Moderate Export Oriented Strategy throughout the period. Also, I collapsed the moderate and strong categories under each category into one. I did this to carry the statistical analysis, but it is clear that some nuisance is lost by doing so. Also, I updated the World Bank Data using IMF data on trade liberalization. Admittedly, it could be argued that these lists do not measure the same and that trade openness is just one feature of a comprehensive *EO*. However, the lists show a high degree of consistency with Tunisia as the only country classified differently.

Figure 1: Average Rates of Growth under EP and IS, Developing Countries, 1964-1990



Note: 51 developing countries
Own data from several sources: World Bank, *World Development Report* (1987), M, Kelly and A. McGuirck, *1992 IMF Report in Issues and Developments in International Trade Policy*, and World Bank Discussion Papers *Trade Policy Reform in Developing Countries since 1985*, 1994a, 1994b

After 1985, policy choices converged toward more open trade regimes. And even if not all countries carried the reforms so far as to change their development strategy, many succeeded in reducing the bias of their regimes. According to my data, toward the beginning of the decade around 20% of the countries in the data-set were classified as having an open or relatively open development strategy. The trend began to change in the mid-1980s and, by the end of the decade, 60% of the countries had adopted the change.

In sum, there is an apparent relationship between the content and performance of the two development strategies, the 1982 crisis and the subsequent recession, and the trend toward the adoption of more open trade regimes. The preliminary evidence above seems to back the results in Lora (2000), who relates falls in GDP per capita (more than any other indicator of crisis) to more openness. The lessons learned from the 1982 shock and early reform attempts about the superiority of *EO* and the exhaustion of *ISS* were quite uncontroversial – although the actual role of the state in alternative development strategies remains highly controversial. Overall, I expect to find a significant relationship between learning from the 1982 shock and the probability of opening. However, this relationship may have been conditional on the high variability of performance observed under both development strategies.

The causal relation between economic crises and learning from them is suggestive but it is hard to grasp empirically.[7] In order to have an empirical test of this relationship, defining what constitutes a crisis is far from the most difficult challenge. The real challenge is to find a convincing operationalization of learning, that is, of the updating of beliefs in view of the outcomes of alternative policies. I explain in section 3 how we can start tackling the relationship between economic shocks, learning and the launching of market reforms using rational updating.

[7] Kahler (1992: 124) presents these difficulties very clearly. "The investigation of shared beliefs is not an impossible empirical task but, once again, it has rarely been attempted in a rigorous fashion. Nor have alternative explanations for policy change been carefully compared to an explanation based on change in ideology or beliefs."

3. Learning, Shocks, and Policy Reform

I first describe the use of rational updating to model learning. I also explain how an economic shock can be modeled in a rational updating framework. I then sketch the relationship between learning from shocks and subsequent policy choices. I will keep the technicalities at a minimum, since I have explained them elsewhere (Meseguer, 2006a; 2006b). Instead, I will rely on concepts, intuition and an illustration to explain the basics of this approach.[8] Learning is an intuitive and simple concept, yet one that is hard to operationalize. The basic idea is that policymakers have prior beliefs about the economic outcomes that will follow the adoption of a particular policy. The world is an excellent laboratory that provides politicians with information about how the policy in question has performed elsewhere. Politicians can learn from that experience, updating their beliefs about the efficacy of a policy after seeing its performance.

Learning requires that politicians hold prior beliefs with some uncertainty. If governments do hold very certain beliefs about what the results of implementing a particular policy will be, then they will ignore the available information since they do not need it. On the other hand, if politicians prefer a policy but are very uncertain about its possible performance, they have a significant incentive to pay attention to what the available experience of that particular policy in the past or in other countries can reveal. Thus, the first prerequisite for learning to take place is that prior beliefs entail some uncertainty. The typical way to model prior beliefs is by means of a probability distribution in which an expected average rate of growth under, for example, *ISS* is attributed a particular variance—i.e., uncertainty. By definition, if governments are dogmatic, that is, if they hold beliefs with no uncertainty, they will not learn.

The available evidence, however, also matters. Two aspects of it in particular will determine the extent to which what you see will eventually prevail over what you initially believe. Imagine that a politician holds very uncertain beliefs about whether her country will experience a boom following the adoption of an export promotion strategy. However, the experience of *many* countries shows that export promotion is conducive to high rates of growth. Thus, the quantity and quality of the available information matter. The latter will be most useful when it is abundant (many countries) and when it is consistent (all of them growing). If the evidence is not abundant or is noisy or both, there will be little to learn from it. A scenario of "maximum learning" entails (1) politicians holding very uncertain prior beliefs about outcomes of policies and (2) abundant and consistent evidence concerning the outcomes of a policy. In this scenario, Bayesian updating yields a very powerful result: politicians will converge in their posterior beliefs (beliefs updated with the available information) regardless of their initial priors. This result is very important since it means that one of the main criticisms of Bayesians – namely, that the choice of priors drives their results – does not hold if evidence is abundant. Note also that, if the choice of policies is driven by politicians' posterior beliefs, then convergence will be not only in posterior beliefs but also in policy choices. The distinction between rational learning and rational choice is important and hopefully will be clear from the illustration below. It means that, within the framework I aim to test, not only do politicians have to be rational learners but they also have to make rational choices in order to see convergence in policy choices. An illustration to make the above concepts intuitive follows. Note that the illustration has not been chosen for theoretical purposes, but for the purpose of clarifying the methodology.

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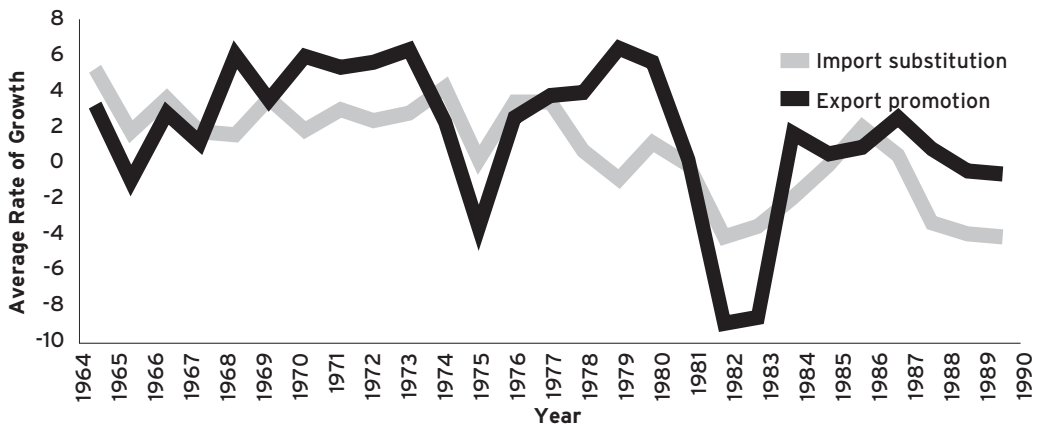
[8] This section is based on Leamer (1991), Gelman et al. (2004), West and Harrison (1997), Lee (1997), and Gill (2002).

Figure 2 shows the *observed* average rates of growth under *EO* and under *ISS* in Latin America in the period 1964 through 1990. These figures do not include rates of growth for Costa Rica, which is the country whose policy choices I explore. It is sensible to expect governments to choose the policy that performs better. Had Costa Rican governments used this criterion of choice, they would have embarked on export orientation in 1968, again between 1970 and 1973, and again in the periods 1977–81, 1984–85, and 1987–90. These are the spells in which, in Latin America, average rates of growth under *EO* were greater than the average rates of growth under *ISS*. Thus, Costa Rica would have changed its development strategy nine times. However, according to my data, Costa Rica changed it only twice: it switched to import substitution in 1974 and liberalized its trade regime in 1986.

Figure 2: Average Region Rates of Growth in Latin America (1964-1990)



It is known that policy regime switches are rare and that policy persistence is more the rule than the exception. Therefore, the comparison of observed rates of growth under alternative policies seems not to be a good characterization of the policy choice process. The latter better fits a pattern of change, continuity, and change rather than of frequent switches.

Does the comparison of posterior beliefs about growth after observing the world provide a more realistic portrait of policy choices than the comparison of observed growth? In a rational framework, the observed outcomes are used as the basis for sequential updating. The updating starts with an expectation of growth following alternative policies and a variance attached to that expectation (prior beliefs). I modeled prior beliefs using average growth figures and the variance of results in the world under one and the other development strategy as observed in the world the year before a country's entrance in the database. Governments update this expectation after observing the average rate of growth of the countries that implemented, say, *ISS* in the region (available experience). As equation (1) shows, the posterior beliefs about expected growth (μ_t) are a compromise between the prior beliefs (μ_{t-1}) and the average observed growth (X_1) for each point in time. The weight given to the observed experience is positively related to the size of the observed sample (n). The parameter t_t is the posterior for the factor that relates the prior beliefs about the variance of the results and the observed variance. This updating process takes place year after year, with the posterior beliefs of one year being the prior beliefs of the following one. As explained above, average rates of growth as well as the variance of

results matter. Thus, the posterior beliefs about the variability of results are also updated. For each country *i* the posterior beliefs about growth and its variability take the following form:

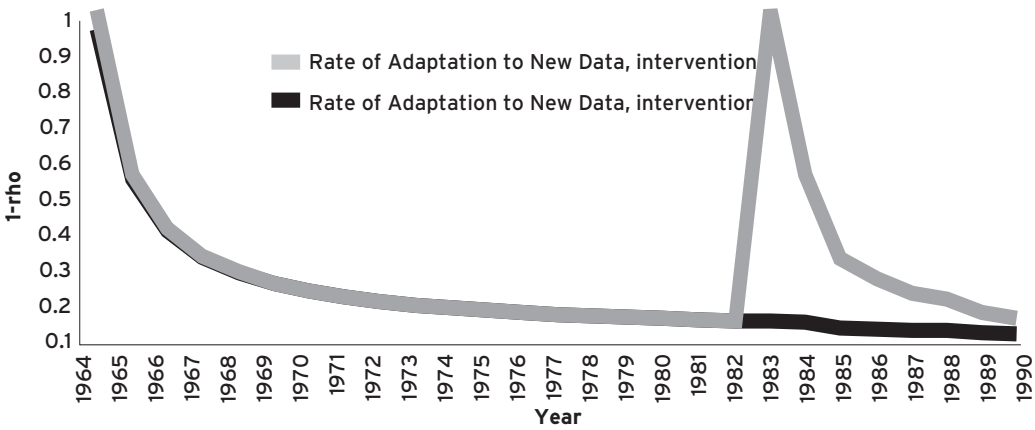
$$\mu_{it} = \frac{\tau_{i,t-1}}{\tau_{i,t}}\mu_{i,t-1} + \frac{n}{\tau_{i,t}}\overline{x_{i,t}} = \rho\mu_{i,t-1} + (1-\rho)\overline{x_{i,t}}; 0 < \rho < 1 \qquad (1)$$

$$s^2_{i,t} = \frac{\mathbf{S}_{i,t}}{\upsilon_{i,t}} \qquad (2)$$

$\mathbf{S_{i,\,t}}$ is the posterior for the sum of squares[9], and $u_{i,\,t}$ is the posterior for the degrees of freedom. A very important piece of information in equation (1) is the rate of adaptation to new data (*1-ρ*). The closer this rate is to 1, the greater the weight given to actual rates of growth as opposed to the prior beliefs about growth in the formation of posteriors. As Figure 3 shows, if initial prior beliefs are vague, the rate of adaptation to new data goes to 0 very fast (black line). Such a property entails that learning takes place swiftly at the beginning of the time series. Later in the updating process, new information has much less impact on the formation of posterior beliefs. In other words, beliefs tend to endure. This feature poses a legitimate question: does such a low receptivity to new information make rational updating useful in predicting policy switches?

In some forecasting models, the shape of the rate of adaptation to new data is altered with an "intervention" (West and Harrison, 1997). The intervention allows the incorporation in the updating process of external information – for instance, a shock – that carries with it a high level of uncertainty. Modeling the uncertainty attached to a shock – attributing a greater uncertainty (variance) to politicians' beliefs – makes the decision-maker automatically more attentive to observed results (grey line). Thus, the two lines overlap but diverge in 1983 after the intervention is modeled for the priors that year. The intervention was introduced in 1983 under the assumption that the growth consequences of the shock are felt with a lag.

Figure 3: Rate of Adaptation to New Information

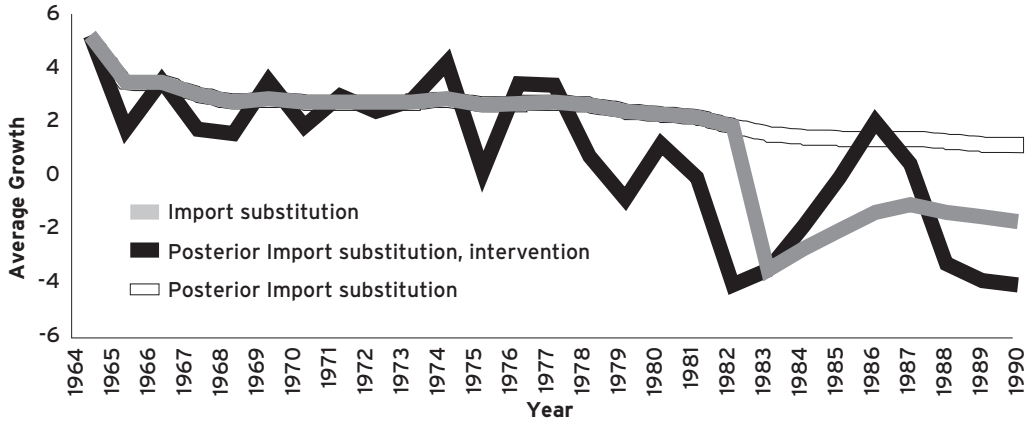


[9] where $S_{i,\,t}$ is the observed sample sum of squares.

From a substantive point of view, modeling the shock makes perfect sense. Policymaking occurs mostly according to a pattern of continuity in which mild ups and downs in outcomes do not bring into question the validity of the economic model. However, an external shock – like the one that happened in 1982 – that deeply affected the performance of the economy increases dramatically the uncertainty about the "correct" economic model. Reasonably, this increased uncertainty makes policymakers more attentive to the information that actual outcomes could reveal about the performance of alternative policies.

Figure 4 is based on the same data as Figure 2 but refers to *ISS* rates of growth only. It shows the series of the *observed* rates of growth under import substitution (black line) and the *posterior beliefs* about average rates of growth under the same development strategy (solid and broken grey lines). These two series of posterior beliefs are the same until 1983. I modeled an intervention in one of the posterior series – simply attributing more variance to the prior beliefs that year to account for the greater uncertainty about the correct model of the world following the 1982 shock. As a result of modeling this intervention, this particular posterior series (solid grey line) matches much more closely the actual series as opposed to the posterior series in which the shock was not accounted for (broken grey line).

Figure 4: Observed Rates of Growth and Posterior beliefs (with and without intervetion, Import Substitution). Latin America

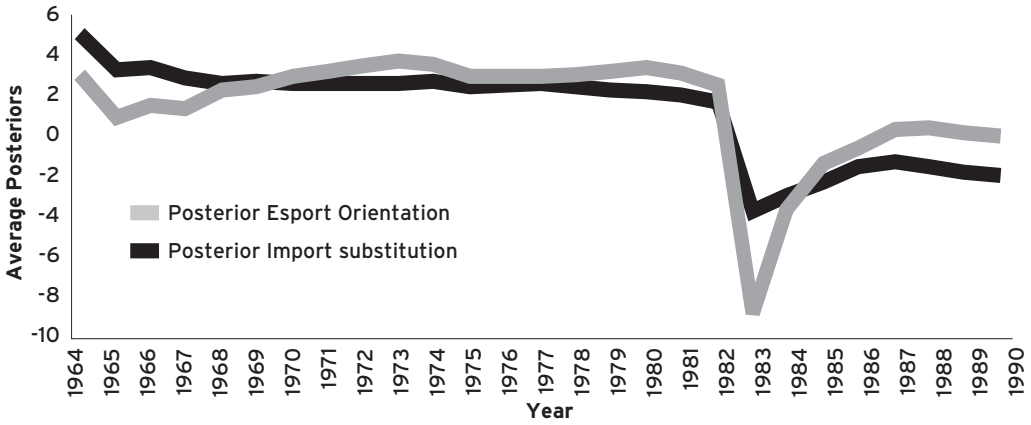


The posterior series are posterior average results calculated with equation (1). For instance, for year 1964, some prior belief is combined with actual average results in the region for the same year. The rate of adaptation to new data determines how much weight the observation will receive relative to the prior. The intervention in 1983 –increase in prior uncertainty for that year – approaches the posterior belief to the actual observation.

Finally, Figure 5 compares the *posterior beliefs* about growth under *ISS* and under *EO* when an intervention is modeled in 1983 in the updating of the both series. A comparison with its "sister" Figure 2 shows that both series of posterior beliefs are smoother than the original ones, which is consistent with the observation that beliefs tend to endure. However, after conditioning on the actual data *and* the economic shock, the actual rates of growth under both policy alternatives greatly affect the formation of the posterior beliefs, which match closely the observed rates of growth. As a result of modeling this intervention, the switch to *EO* in the mid-1980s is anticipated. Note that at least in Latin America – but

not in the whole sample, as I showed above – countries under *EO* experienced a deeper yet shorter recession than the countries under *ISS* following the 1982 crisis. Importantly, the posterior series accounts for the faster recovery of those countries in the region under an *EO* development strategy.

Figure 5: Posterior Beliefs based on Regional Experience after Modeling the shock, Export Promotion and Import Substitution, Latin America



It is very important to make clear that this operationalization of learning from shocks does not entail that politicians will switch trade policy regimes. Policymakers may be rational learners and yet they may *not choose* policies rationally for a host of political reasons (strong interests or institutions that oppose; strong public opinion against reforms, and so on and so forth). Thus, rational choices do not automatically follow rational learning. Moreover, policymakers may be rational learners, and yet the evidence may be so confusing that, even if one is a rational learner and makes rational choices, a change of policy may not be justified on the basis of experience alone. If the evidence is confusing, it may be perfectly rational not to switch policies. I emphasize this point to make clear that by making governments more attentive to actual performance by modeling an intervention I am not artificially "forcing" them to change the course of their policies. In other words, interventions are not a *post hoc* strategy to accommodate reality.

4. Model and Results

I present the results of several explanatory models of the decision to adopt *EO*. The explanatory variables are (*a*) the difference in posterior beliefs about growth and (*b*) its volatility under and not under an *EO* strategy - calculated as just illustrated. These are the proxies for LEARNING. I enquire whether learning from others as opposed to learning from others *and* learning from the 1982 shock did affect the decision to adopt those policies. I control for other alternative explanations of policy choices and for domestic factors that might have affected decisions regarding the development strategy.

Table 1 shows the dynamic probit estimations of the probability of switching to *EO*. The dependent variable is dichotomous, taking the value of 1 for the countries and years under an *EO*

strategy. The dynamic probit model assumes temporal dependency in the dependent variable and gives estimates of the probability of adopting these policies and of remaining under them.[10] Given data constraints, I report only the estimations concerning the probability of adopting these policies.[11] The list of variables used in the study, descriptive statistics, and countries are reported in Appendixes A and B.

I use three different model specifications. The first one includes LEARNING VARIABLES, which were calculated using rational updating. I calculated several series of posterior beliefs about growth under *EO* and *ISS*. Since both pieces of information are likely to affect the decision to switch policies, the posterior beliefs are about average results and about the variability of results under both development strategies. I structured the available information in three geographic groups: own past experience under alternative policies, experience in the region under alternative policies, and experience in the world (excluding own and regional experience).[12] The justification for this structuring of information at three levels is that the informative value of particular experiences increases with historical, cultural, and institutional similarities. It seems reasonable to hypothesize that politicians learn somewhat selectively on the basis of geographic propinquity or linguistic, historical, and cultural similarities (Robinson, 1998; Hacking, 1997; Weyland, 2005; Simmons and Elkins, 2004). For instance, Enrique Iglesias, former president of the Inter-American Development Bank, contended that "the ideas developed in the North during the Reagan–Thatcher era were very important in Latin America, but the Chilean experience was far more significant in so far as it provided a viable model. The success of the Chilean experience was very much noted by other regional leaders" (quoted in Williamson, 1994: 493-494).

The learning variables are the *difference* in posterior beliefs about growth under *EO* with respect to *ISS*, and the *difference* in posterior beliefs about variance of results under *EO* with respect to *ISS*. I expect the probability of adopting *EO* to be positively related to this difference in posterior beliefs about average growth results. However, how the variance of results affects the probability of a switch in policies depends on governments' attitudes toward risk. If governments are risk averse, the probability of switching to a particular policy will be inversely related to the posterior beliefs about the variance of results. But if governments are risk prone and feel seduced by some outstanding policy experience that, however, has been disastrous elsewhere, then we could find a positive relationship between a high variability of results and the probability of adopting a policy. The empirical test will inform us about governments' attitudes toward risk.

The second specification adds two additional mechanisms whereby export orientation may have spread. On the one hand, governments may have emulated each other without actually learning from each other. Emulation, unlike learning, does not imply a reassessment of causal maps that link policies to outcomes. Thus, emulation does not entail an improved understanding of cause-and-effect relations (May, 1992: 333; Meseguer, 2005). Another difference is that learning is a purposive search for information: a problem is in place and a solution is sought. However, governments may want to imitate the policies carried out elsewhere for a host of reasons other than problem solving. Credibility and reputation are among them (Weyland, 2005). Governments may copy the policies implemented by countries acclaimed as successful in an attempt to win international favor. In turn, signals of commitment to "good policies" may be a requisite for access to scarce external financial resources. Finally, policies that are carried out by a

[10] See Amemiya (1985). For applications, see Vreeland (2003).
[11] Due to the very low number of transitions to import substitution, the estimates of continuity were not reliable for this policy illustration.
[12] The regions are Latin America, Africa, South Asia and South East Asia. I excluded South Asia from the final estimations given that the experience of *EO* in the region was minimal for the period under study. This means that the influence of prior beliefs would not vanish during the updating process, thus driving the posteriors. For the same reason, the coefficients concerning "own experience" should be treated with great caution.

majority of other governments are easier to justify domestically, especially when those policies are unpopular (Ikenberry, 1990; Bagheri and Habibi, 1998; Vreeland, 2003). Emulation entails that governments adopt policies because they see many other countries adopting that policy, which in turn is often interpreted as acceptance of the policy as "good" (Broz, 2002). I operationalize EMULATION as the sheer number of other countries contemporaneously under an *EO* strategy. I anticipate a positive relationship between seeing many others with a policy and adopting it.

The second diffusion mechanism I explore is outright coercion by the International Monetary Fund (IMF). The IMF exchanges loans for policies. It advocates export promotion including this policy among the conditions for receiving the Fund's money. Whether the IMF is persuading or coercing is not clear, though. For some authors, the availability of external funding delays the adoption of reforms unless the funding is conditional (Lora, 2000; Drazen and Easterly, 2001). Many others consider politicians' room for maneuver to be greater than a hypothesis of coercion may lead one to think (Nelson, 1990; Kahler, 1992; Stallings, 1992; Haggard and Webb, 1994; Weyland, 2005). According to a number of scholars, IFIs teach and persuade instead of coercing. What appears as imposition may actually be a case of "technocratic alignment", that is, a coincidence of interests between IFIs and local policymaking cadres socialized in the same set of ideas (Nelson, 1990; Stallings, 1992; Kahler, 1992; Haggard and Webb, 1994). As is standard in international political economy research, I operationalize coercion through a dummy variable that takes the value of 1 if a particular country in a particular year is under an IMF agreement. I expect the presence of an IMF agreement to be positively related to the probability of switching to *EO*.

The third specification accounts for the possible impact of the 1982 shock on learning and on policy choices. Thus, this specification is the crucial one for the argument that is being tested in this paper. It includes other control variables and the intervention to account for the 1982 crisis. The posterior belief series were calculated by introducing an intervention in the year after the crisis as just explained. The prior beliefs for this year were specified as high uncertainty priors, which dramatically increased the rate of adaptation to observed data. The intervention makes the posterior beliefs match closely the observed results.

I also controlled for the size of the country (SIZE), the political regime using two alternative operationalizations in different models –a dichotomous (REGIME) and a categorical measure of democracy (POLITY)—, the holding of elections (LAGGED ELECTIONS), and membership in GATT/WTO. Small countries are expected to be more open. In developing countries, democratization entailed enfranchising labor. Labor is the abundant factor in these countries and, according to the Stolper-Samuelson predictions, labor is the main beneficiary of opening to trade (Milner and Kubota, 2005). Thus, a positive relationship is anticipated between democracy and trade opening. Governments are expected to introduce reforms immediately after elections to take advantage of honeymoon periods. Finally, membership in GATT is expected to have a positive impact on the probability of opening.

Results are reported in Table 1. Learning from economic shocks or, in other words, increased uncertainty about the validity of the alternative models of development was somewhat relevant to explaining the adoption of *EO* (model (3)). Learning from the experience of others *only* could not explain the decision to open. In fact, the baseline model of learning *without* modeling shocks (model (1)) shows that policymakers maintained a persistent risk-averse attitude in view of the available experience and this regardless of the level of analysis– own, region, world. The risk aversion is robust across specifications.

Table 1:

Export Orientation, dynamic probit models, several specifications

Dependent Variable: Adoption of Export Orientation.	Baseline Model (1)	Alternative Diffusion Mechanisms (2)	1982 Crisis and Other Controls (3)
CONSTANT	**-2.91*** (-4.12)	**-4.62*** (-4.99)**	**-6.15*** (-3.32)**
LEARNING FROM OWN EXPERIENCE			
AVERAGE RESULTS	**0.05*(1.84)**	0.03 (0.92)	**0.06* (1.65)**
VARIABILITY OF RESULTS	**-0.09** (-2.41)**	-0.06 (-1.46)	-0.04 (-0.80)
LEARNING FROM REGIONAL EXPERIENCE			
AVERAGE RESULTS	0.11 (1.03)	**0.26* (1.91)**	0.18 (1.14)
VARIABILITY OF RESULTS	-0.05 (-0.45)	-0.04 (-0.29)	-0.16 (-1.45)
LEARNING FROM WORLD EXPERIENCE			
AVERAGE RESULTS	0.04 (0.41)	0.17 (1.20)	0.15 (0.90)
VARIABILITY OF RESULTS	-0.29 (-1.33)	-0.28 (-1.02)	-0.50*** (-2.49)
EMULATION		**0.72*** (4.79)**	**0.72*** (4.15)**
IMF		**0.50** (2.47)**	**0.49** (2.23)**
GATT			0.21 (0.88)
REGIME			0.21 (0.73)
SIZE			0.04 (0.52)
ELECTIONS			0.07 (0.30)
Log Likelihood	-123.63	-110.05	-104.14
Chi-Squared	1210.54	1237.71	859.42
P-Value for F	0.000	0.000	0.000
Pseudo-R2			0.80
Observations	1171	1171	872

*p<.10; **p<.05; ***p<.01; t-tests in parentheses; all variables are lagged one year.

However, learning from the great diversity in experiences in the region and other regions of the world had a negative impact on the probability of liberalizing the trade regime. In particular, the dispersion of growth results observed both in the *region* and in the *world* under *EO* reduced the probability of a particular country liberalizing. A high variability of results under *EO* pervades the data although the variability of results under *IS* is even greater. Variation of one standard deviation around the mean of the variable LEARNING FROM THE VARIABILITY OF RESULTS, WORLD *reduces* the probability of adopting *EO* around 7%. [13] This result is suggestive in that it offers a complementary explanation to societal opposition for the delay in jumping on the trade openness bandwagon: in accordance with the risk aversion assumption, governments do dislike policies that yield inconsistent results.

It is also important to emphasize that the two alternative mechanisms of policy convergence that I considered (EMULATION and COERCION) were positively related to the probability of adopting *EO*. Countries under IMF agreements were more likely to adopt export promotion, although the marginal effect of this variable is low (3% more likely to liberalize when under an IMF agreement). This result backs the view of those who argue that national governments do have considerable room of maneuver. Also, it seems that countries adopted *EO* because many others adopted it too, which confirms that "the rush to free trade" had a lot to do with herding on the behavior of others.[14] A one standard deviation variation in the variable EMULATION increases the probability of adopting *EO* in about 4%. Somewhat surprisingly, none of the domestic controls I included turned out to be significant, although SIZE, GATT, and LAGGED ELECTION showed the expected sign. None of the indicators of political regime turned out to be significant either. For want of more refined domestic operationalizations, the adoption of *EO* appears internationally driven.

Overall, the story of the switch to more open trade regimes after the 1982 shock as modeled is one of positive but somewhat weak rational learning from the own experience but also negative and stronger learning in view of the important variation in observed outcomes under alternative strategies in the region and elsewhere. Emulating others was an important reason to liberalize. Thus, these results confirm the common wisdom that links learning from the 1982 shock to the later decision on opening only in part and in a way that contradicts the common wisdom: rational learning appears more influential in having prevented a quick switch to *EO* despite knowledge of the virtues of this development strategy before the 1982 shock.

5. Conclusion

In this paper, I systematically explored the role that learning from economic shocks as opposed to learning from others during normal times played in one policy decision: adopting export promotion. By so doing, I put to the test the widespread view that learning from policy mistakes and successes triggered a process of learning that in turn led to the abandonment of statist policies and to the adoption of liberal economic policies. A deep economic crisis questions the validity of the economic model seen as responsible for it. It draws politicians' attention to what works as opposed to what has failed, and increases politicians' uncertainty about the outcomes of policies.

[13] I focus on variation in the world because simulated probabilities for variation in the region were often not significant.
[14] The expression "rush to free trade" is due to Rodrik. See Guisinguer (2005) for an alternative explanation of trade liberalization based on the pressures of competition.

In the case of development strategies, the 1982 debt shock was diagnosed as the result of the wrong (interventionist) policies. At the same time as much of the developing world was experiencing a deep recession, East Asian countries muddled through the crisis quickly and without experiencing as much economic disarray. All the elements that spur learning were there: a theoretical diagnosis of failure, a theoretical diagnosis of success, and evidence of the superiority of one policy to another. Learning from the 1982 shock appears consequential for the switch toward more openness. The paper showed that the anecdotal accounts of learning do withstand more systematic scrutiny and that particularly the experience of the region and the sheer numbers of others liberalizing, interpreted as symbolic emulation, had a positive impact on the probability of opening the trade regime. However, outstanding average figures quite often masked great variation in performance. This variation as observed in the world translated into negative learning that could explain why politicians did not jump on the reform bandwagon as fast as one could have expected from the "official" readings of *EO* versus *ISS*. None of the domestic political and economic variables I employed turned out to be significant. Admittedly, I used as control variables those more amenable to large N statistical analysis. For this reason, an explanation based on learning should be taken as complementary to other well-known political economy explanations of the delay of reforms that have to do with the impact of organized urban labor in pressing for the continuation of the *ISS.*

This paper presented a first attempt to systematically test two related pieces of conventional wisdom: that shocks cause reform and that they do so because crises spur a process of learning. Overall, the learning process seems to have been relevant but not independently of the empirical consistency that existed regarding policy failures and policy successes and of the general positive mood in favor of greater openness, as the evidence above showed.

Appendix A:

List of Countries

Burundi	Mali	Uganda	Guatemala	Paraguay	Philippines
Cameroon	Mauritius	Zaire	Nicaragua	Peru	Singapore
Ethiopia	Morocco	Zambia	Trinidad	Uruguay	Sri Lanka
Gambia	Nigeria	Costa Rica	Argentina	Venezuela	South Korea
Ghana	Senegal	Dominican Republic	Bolivia	Bangladesh	Taiwan
Ivory Coast	South Africa	El Salvador	Brazil	India	Thailand
Kenya	Sudan	Honduras	Chile	Malasya	
Madagascar	Tanzania	Jamaica	Colombia	Nepal	
Malawi	Tunisia	Mexico	Ecuador	Pakistan	

Appendix B:

List of Variables and Descriptive Statistics

DEPENDENT VARIABLE, *EO*: 1 if a country a particular year was under a Moderate or Strong EO strategy, 0 if it was under a Moderate or Strong ISS strategy (World Bank, 1987), IMF(1992; 1994).
POSMI: difference in posterior beliefs, average results, own experience; own construction.
POSDI: difference in posterior beliefs, variability of results, own experience; own construction.
POSMR: difference in posterior beliefs, average results, regional experience; own construction.
POSDR: difference in posterior beliefs, variability of results, regional experience; own construction.
POSMW: difference in posterior beliefs, average results, world experience; own construction
POSDW: difference in posterior beliefs, variability of results, world experience;
UNDER: 1 = country-years under an IMF agreement, 0 = otherwise. Taken from Vreeland (2003).
GROWTH RATES: Annual Rate of Growth of per Capita income, taken from Gandhi (2004).
REGIME: Dummy coded 1 for dictatorships and 0 for democracies, taken from Gandhi (2004).
POLITY: Computed by substracting the Polity IV AUTOC score from the DEMOC score; the resulting polity scale ranges from -10 to +10, where +10 is strongly democratic and -10 is strongly autocratic.
http://www.cidcm.umd.edu/polity/
EMULATION: Number of other countries in the world, excluding the country in question. Own construction.
SIZE: natural log of SIZE, which is defined as LEVEL* POP (level of economic development, Real GDP per capita, 1985 international prices, chain index* population in thousands). Taken from ACPL (1997).
LAGGED ELECTION: Dummy variable coded 1 if legislative elections were held the previous country-year.
Source: Vreeland (2003).
GATT: Dummy variable. It takes the value of 1 if a country-year belongs to GATT.

Descriptive Statistics
All results based on nonmissing observations

VARIABLE	MEAN	STD.DEV.	MINIMUM	MAXIMUM	CASES
POSMIL	.864668404	3.45452013	-13.3396931	16.1264521	887
POSMRL	1.44758065	1.83731886	-6.79927108	12.7336218	887
POSMWL	2.93828369	1.11229733	-1.75178778	6.05370467	887
POSDIL	-.615744570	2.33061346	-12.5280289	4.53107080	887
POSDRL	-1.90656896	2.10054602	-6.85757740	2.58647165	887
POSDWL	-1.72059221	1.27185076	-4.56364985	1.38452142	887
REGL	.696730552	.459929966	.000000000	1.00000000	887
NWL	1.36392334	.664298835	.800000000	3.00000000	887
UNDERL	.430665163	.495448707	.000000000	1.00000000	887
ELEC	.217587373	.412838051	.000000000	1.00000000	887
SIZE2L	16.6988366	1.43540359	12.7280281	20.2542699	887
GATTL	.671927847	.469776138	.000000000	1.00000000	887

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