A Theory of the Origins of Trade Liberalization in Developing Autocracies

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This paper argues that an exogenous easing of international trade can increase the probability that a developing non-democracy undergoes trade liberalization if inequality is sufficiently high and if the country is subject to an exogenous shock. Domestic groups that seek openness, armed with the threat of revolutionary democratization, reach a compromise in the form of redistribution via trade openness with elite, protectionst status quo-bearers rather than wage an uncertain and costly conflict. Tentative evidence is provided in the form of event history analysis of data for 80 developing countries in the years 1970-1999.

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1 Introduction

Under what conditions do non-democratic governments decide to open their economies? Do improvements in the international economy increase the chance of a country opening its borders or do precipitous declines? And how does the push for democratization interact with exogenous economic forces to make trade liberalization more or less likely? This paper attempts to address these questions by examining the conditions under which a closed non-democracy may open its own doors given an exogenous easing in international trade.

While research exists that examines the link between democratization and trade liberalization in developing countries, almost no research examines the politics of liberalization in developing non-democracies. To give some brief empirical support to relevancy of this undertaking, Figure 1 contains two plots, one of the absolute number of developing countries with open trade policies by regime annually, and the other of the fraction of developing countries of a given regime type with open trade policies annually. The sample of 179 developing countries comes from Milner and Kubota (2005).[1] In the first plot we see that though developing democracies are opening at a greater pace than developing non-democracies, the non-democracies are also increasingly open. Further, to address the fact that the total number of developing non-democracies is trending downwards throughout the period, the second plot shows the fraction of democracies and non-democracies that are open. Though again a larger fraction of democracies are open than non-democracies, the difference is much less extreme here. Furthermore, as Haggard and Webb (1994) argue, domestic trade liberalization occurred prior to democratization in many developing countries, implying that even if a large fraction of the increase in openness in the developing world came from democratization, as Milner and Kubta (2005) claim, a significant portion is also the result of a liberalization process that preceded the so-called third wave of democratization (Huntington 1991). Thus it would appear that a complete picture of contemporary global trade liberalization must take in to consideration non-democracies as well as democracies.

[1] Countries are considered as democracies if their Polity IV regime score is 0 or greater and a non-democracy otherwise in a given year and are considered to have an open economy if they have a value of 1 on the Horn Welch and Wacziarg update of the Sachs and Warner openness measure (Gurr et al. 1990; Jaggers and Gurr 1995; Sachs and Warner 1995; Horn Welch and Wacziarg 2008). All variables are fully described in the empirical section of the paper.

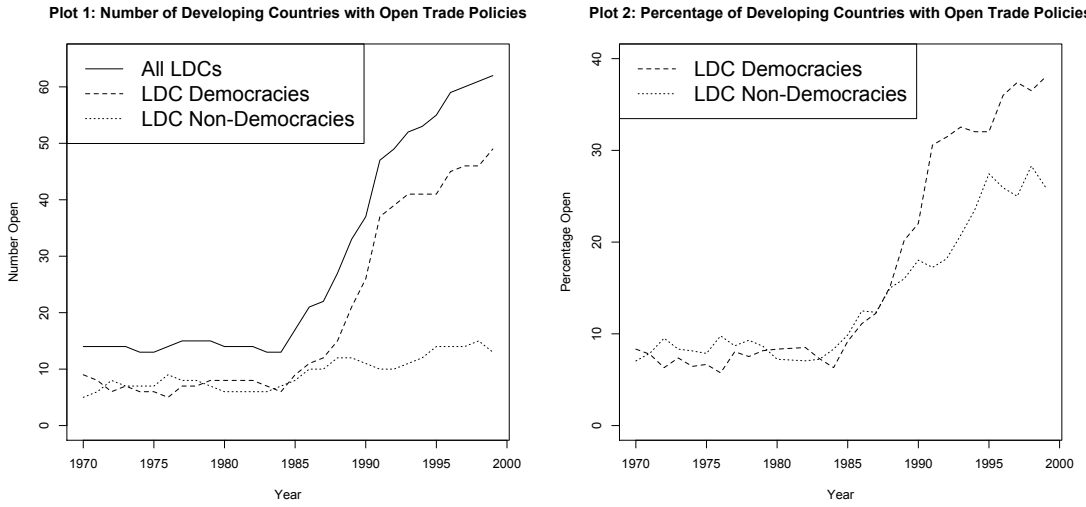


Figure 1: Absolute Number and Percentage of Open Developing Countries by Regime Type

The argument presented here expressly considers the conditions under which non-democracies are likely to open their economies to trade given an external climate that is increasingly hostile to autarky. The argument has three core elements: first, a link is established between an exogenous easing of trade globally and the interests of domestic actors in economically insulated countries. Through a variety of mechanisms identified by Frieden and Rogowksi (1996) such as increases in the terms of trade and changes black market prices, changes in the external economic climate are communicated to the relevant domestic actors, altering the relative prices these actors face and increasing the inefficiencies of closure broadly speaking.

The next element, focusing on political economy models of interest formation, examines how an exogenous easing in trade emboldens some domestic cleavages to push for openness and renders others either enervated or opposed. To be more precise, a Hecksher-Ohlin model with three factors and nonhomothetic preferences is developed, establishing that in labor-abundant developing countries the communication of an exogenous easing in trade through shadow prices drives labor-holders (the masses) to push for liberalization and capital-holders (elites) to maintain opposition to it. The possibility of a pact between land-holders and labor-holders in land-abundant countries is neutralized by the impact the increase in prices of domestically produced agricultural goods implied by liberalization would have on the real wages of labor in such a country.

The third and final element of the argument, focusing on how these cleavages interact and bargain, examines how increasing levels of inequality and shocks to the extant regime allow for the previously politically excluded masses to force elite capital holders to agree upon a policy of trade liberalization by using the credible threat of institutional transformation or revolution. Despite the preference of mass labor for full-scale democratization, it is argued that when inequality is sufficiently high and when an exogenous shock or political crisis has both weakened the extant regime and emboldened the opposition, elite and mass groups can agree to an alternative redistributive policy of trade liberalization, thus avoiding the alternative of a costly and uncertain civil conflict.

The argument is tested by use of survival analysis techniques on a modified version of Milner and Kubota (2005)'s democratization and trade liberalization dataset. By estimating both Kaplan-Meier product limit estimators and Cox proportional hazard models on a subsample of non-democratic and (initially) non-open economies, the empirical section attempts to test the hypothesized relationships between inequality and exogenous shocks on the probability of trade liberalization in developing non-democracies experiencing an easing in global commerce. While evidence is found to support the positive link between crises and liberalization and the indeterminacy of the relationship between land abundance and opening, weak and somewhat contradictory evidence is found in the case of the hypotheses generated regarding inequality and trade opening and the interactive effects of inequality and crises.

The paper will unfold as follows: first, relevant literature will be surveyed and reviewed with consideration of work that examines the links between the international economy and domestic cleavage formation, domestic bargaining for openness, and the conditions under which democratization is most likely. Next the two parts of the theory will be fully delineated, the first examining what kinds of domestic cleavages are to be expected given an exogenous easing in the costs of engaging in international trade and the second exploring the conditions under which these opposed cleavages are likely to agree to a joint purpose of an economic opening. Third, after the data is fully described, the theory will be empirically tested through event history modeling.

2 Literature Review

The links between trade and its effect on domestic actors in the political realm and the subsequent efforts at securing (or blocking) economic openness by these actors have been the subject of a great deal of theoretical and empirical research. While some approaches directly examine the link between exogenous changes in the global economic climate and variations in policy outcomes in different political contexts, most work isolates one segment of this causal chain, concerning itself either with how domestic cleavages form or change given differing external stimuli or with how these new cleavages go about securing their desired policy goals.

Thus three main bodies of literature are drawn upon in this papers theoretical approach, the first two of which attempt to isolate the two halves of this political story. These two lines of research focus first on the links between the international economy and domestic cleavage formation and second on the process through which these cleavages reach (or attempt to reach) their desired policy outcomes. In addition to more traditional lines of research in international political economy this paper employs ideas imported from a nascent body of literature that examines the links between domestic inequality and the prospects for democratization or the expansion of suffrage.

2.1 Trade and Domestic Cleavages

How does the global economy affect domestic cleavages, particularly with respect to the desire to engage in trade? Rogowski (1989) provides a compelling and seminal approach to this question. Rogowski employs the logic of the Stolper-Samuelson theory, namely that those factors that are abundant in a given country relative to the rest of the world stand to gain from trade openness and that those actors that gain from trade will find themselves better able to push for openness. Rogowski further claims that the effects of an increase in exposure to trade have a similar impact to the opening or closing of a given economy. Thus, as global trade grows, those actors that hold factors that a country possesses in relative abundance to the rest of the world will see their incomes rise and will be better able to push for their common goal of openness. In this approach, it is assumed that holders of particular factors are mobile: they are able to move in to a specific economic sector without cost. While Rogowski uses the degree of global trade as an independent

variable, his dependent variable is not the ultimate policy outcome but instead cleavage formation. Thus he sorts countries by their relevant factor endowments, be they rich or scarce in capital, land, or labor, and examines, given the current trend in the ease of trade, the resulting cleavages. By only examining the impact of exogenous changes in the ease of trade on domestic coalitions, Rogowski is unable to hypothesize about whether or not empowered domestic actors are able to achieve their goals.

While Rogowski examines the formation of domestic cleavages along class or factor holding lines, Gourevitch (1986) instead considers the possibility that domestic interest groups will form along sectoral lines that cut across classes in the face of changing external economic circumstances. In considering how social actors react to changing economic circumstances Gourevitch disaggregates "first, between business, agriculture, and labor; and then, within each of those broad categories, among sectors or product families (for the first two) and type of employment (for the third)" (Gourevitch 1986, 56). Thus, in the face of an exogenous shock, these disaggregated classes can find common interests, allowing for the possibility of cross-class alliances on policy issues that form along sectoral lines.

Hiscox (2001) bridges these two approaches by examining the conditions under which domestic cleavages on trade policy issues will form along factoral or sectoral lines. The key moving part here is the question of factor mobility: in the Stolper-Samuelson approach employed in Rogowskis analysis, factors are assumed to be fully mobile. In the alternative Ricardo-Viner approach, however, factors are considered as specific and unable to relocate to profitable sectors. The result is that regardless of a countrys factor abundance profile, if a given sector produces for the domestic market and is unable to compete in the face of imports, the factors in this sector will be unable to move to another industry and thus will align in their opposition to openness. The question then becomes under what conditions will these factoral or sectoral cleavages arise, given an external environment that is either hostile or hospitable to trade. Hiscox quantifies the moving part here, namely factor mobility, by examining whether or not wages and profits vary within given sectors. By the logic of arbitrage, if wages and profits are identical across sectors, factor mobility holds as factor-holders are able to move in to profitable sectors, eroding the differences in their returns. Conversely, where

there is great differentiation of wages and profits within industries, factors are said to be specific. Hiscox tests his hypothesis that factor mobility measured by wage and profit differentials leads to different cleavages on the trade issue by examining the cleavages the exist in six developed countries in both the nineteenth and twentieth centuries and finds that as levels of mobility change within countries, class cleavages form where mobility is high and sectoral cleavages form when it is low.

While Rogowski, Hiscox, and Gourevitch all examine cleavage formation in economies that are directly affected by exogenous changes in the costs of trade, Frieden and Rogowski (1996) provide an excellent starting point for examining how changes in the international economy can affect domestic coalitions in closed economies. This is of particular interest for the purposes of examining under what conditions a currently closed economy may be expected to undergo the process of openness. Frieden and Rogowski develop the concept of an exogenous easing of the cost of trade as an explanatory variable when examining both trade policy coalition formation and trade policy outcomes. By an exogenous easing of trade the authors mean "an overall *decrease in the costs, or increase in the rewards, of such exchange:*[2] either an exogenous reduction in the technical, economic, and political barriers to trade, investment, migration, or payments; or an exogenous change in production processes or endowments that increase the returns to international, as opposed to domestic, economic activity" (Frieden and Rogowski 1996, 27). The authors further claim that these exogenous changes in cost of trade that arise exogenously can be regarded analytically as changes in the relative prices. Further, in a closed economy, these relative changes in prices are still transmitted to domestic actors who are insulated from the world market via shadow prices. Thus domestic actors that stand to gain from openness given the changing costs of trade are able to realize what they are missing through enduring closure and may push for openness. Finally Frieden and Rogowski argue that the cost of maintaining a closed economy in the face of the efficiency gains brought upon by openness can be measured through changes in the terms of trade. As the terms of trade increase, indicating that the world price of goods a country exports have risen, the cost of limiting these exports becomes more apparent. For our purposes, this piece provides the idea that an exogenous of easing of trade, measured as an improvement in a countrys terms of trade,

[2]Italics are in the original.

transmits to actors in a closed economy the reality that they may stand to gain (or lose) from openness, promoting cleavage formation along those lines.

One final line of reasoning regarding domestic cleavage formation in the face of the changing international economy must be noted. As Baker (2006) highlights, the standard Hecksher-Ohlin model, analogous to the Stolper-Samuelson approach delineated above, assumes homothetic tastes. This implies that, given exposure to trade, the welfare of the different classes in an economy is only affected by the returns to their factor of production and not through "differential welfare impacts because of varying consumer taste" (Baker 2006, 925). If, instead, tastes are considered as nonhomothetic, allowing consumers to have varying consumption bundles, trade liberalization increases the prices of exported goods and decreases the prices of imported goods, harming those consumers whose consumption bundles largely include domestically produced exported goods and helping those consumers whose bundles do not. Thus while changes in the international economy that make trade less costly may improve the welfare of domestic actors that benefit through openness, their real returns may be diminished if they also heavily consume goods that the country exports.

To synthesize, there are two main types of cleavages that are expected to arise as a result of changes in the international trading environment: the factor based, class approach, championed by Rogowski, and the sectoral, cross-class alliance approach, forwarded by Gourevitch. Hiscox indicates that these two types of cleavages, class/factoral or sectoral, can arise in the same country under differing degrees of factor mobility. Finally, per Baker, a full model of domestic cleavage formation as a response to the changing trade environment must also take in to consideration the differing impacts of openness on consumption and real wages.

2.2 Domestic Cleavages and Policy Outcomes

Having outlined the scholarly debate regarding the types of domestic trade cleavages and the conditions that lead to their development or alteration, the literature discussing the link between coalitions and policy outcomes will next be considered. As will be shown, the literature largely focuses on the democratic setting or the impact of democracy as an institution and has little insight

in to how coalitions may realize their desired policy outcomes in autocracies, a limitation this paper hopes to address.

A large body of literature examines the links between trade cleavages and electoral and roll call voting. For example, Hiscox (2002) first identifies the degree of factor mobility in the United States over time to identify whether or not trade cleavages are expected to follow class or sectoral lines in different historical periods and subsequently empirically tests whether Congress votes on trade bills follow these patterns. Irwin (1996) undertakes a similar enterprise by studying the 1923 British general election fought entirely over the issue of protection and finds that voters largely cast ballots along sectoral rather than class lines. A similar paper regarding the 1988 Canadian general election again fought over free trade finds that individuals voted along both factor and industry lines (Beaulieu 2002). As all of these pieces study democracies and the democratic process, however, they shed little on to the question of how differing cleavages change trade policies in non-democracies or through extra-electoral processes such as through pressure on regulators or relevant government bureaucracies.

In addition to examining how domestic trade cleavages are able to realize their ambitions in an electoral or legislative framework, a significant amount of research examines the impact of democracy as an institutional mechanism that promotes or hinders openness. Milner and Kubota (2005) argue that the link between domestic cleavages and openness is largely a function of regime type. Examining the dual trends of increasing global openness and democratization that have unfolded over the past half-century, the authors posit that the two are directly linked. As most non-democracies are located in the developing world, the authors assume that they are labor abundant relative to the rest of the world and thus in a mobile factors mold claim that labor should support openness while capital should be largely opposed. Prior to democratization elite capital holders are able to use their stranglehold over the policy making process to ensure that the economy remains closed, protecting them from the lowered returns to their factors exposure to trade would engender. After democratization, however, outwardly oriented labor is able to use its majority position in the electoral arena to achieve the openness they prefer. To examine their claims Milner and Kubota employ panel data of developing countries between 1970 and 1999 and find that democratic regimes

are more likely to have open economies and tend to have lower tariff rates. Mansfield, Milner and Rosendorff (2002) further argue that democratic institutional structures incentivize decision-makers to join free trade agreements though unfortunately their argument has little to say about how cleavage structures that favored protectionism would operate in such a setting. Not all authors agree on democracys inherent ability to enable domestic claims for openness, however. Kono (2006) argues, for example, that democratic governments have a greater incentive to 'hide' protection from constituents and so displace protectionism from transparent mechanisms such as tariffs to more obscure ones such as complex regulatory frameworks.

In summary, the literature on the linkages between domestic cleavages on trade and openness has little to say about how the different domestic cleavages it predicts will behave in a non-democratic setting. While a significant amount of work has been done to identify whether or not voters and legislators vote in favor of the policies that represent their presumed interests on trade and on the impact of democracy on enabling or preventing openness, less work directly examines how these process operate in the non-democratic setting.

2.3 Inequality, Democratization and the Threat of Revolution

A key element to the argument of this paper is that openness can be realized in non-democracies when there exists a credible threat for a push towards democratization. In order to understand both the conditions under which this push is most credible ideas must be imported from works that study the links between inequality and democratization as well as the conditions under which democratization is likely to occur.

Boix (2003) argues that democratization is more likely where inequality is low and where capital is the most mobile. Capital, afraid of the ability of labor to set egregious tax rates in a democratic setting, fears democratization in so far as higher inequality increases the demands for redistribution from labor and factor immobility prevents it from being able to move its assets abroad in order to avoid domestic taxation. Though repression is costly, where inequality is high and where capital is stuck, it will prefer this option to the more costly alternative where extension of the franchise enables laborers to extract all of its wealth. It is vital for our purposes to identify where the

threat of democratization is highest. To Boix, this relationship between inequality and the threat of democratization is largely linear and positive: as inequality increases, the masses see that they have more to gain through regime change and taxation. Collective action in this model is exogenous, however, and Boix makes no efforts to consider the conditions under which labor is more or less likely to create the collective mechanisms required to stage a revolution.

Acemgolu and Robinson (2006) forward an alternative approach by portraying democratization as a credible commitment on the part of the elite to future redistribution. The authors argue that exogenous shocks such as wars or economic crises empower the masses with the ephemeral capability to overthrow the regime if it is not able to provide them with the redistribution they seek. Though the elites in an autocracy could provide assistance as a means of staving off this temporary threat, the underclass knows that this policy can be easily altered in a subsequent period and so can only be satisfied with the institution of democracy as a means of permanently entrenching their desire for redistribution. Unlike Boix, however, Acemoglu and Robinson see the probability (not necessarily the threat) of democratization as a function inequality as taking on a hump shape. At low levels of inequality, the lower classes have no incentive to fight for democratization, as redistribution will bring them little. As inequality increases and the masses have more to gain, they will begin to agitate. Similarly, as what they stand to gain is not extreme, the elite are more likely to acquiesce. It is at the higher levels of inequality where the elite will resist openness at almost any cost, as the amount they stand to lose from redistribution is more costly than almost any amount of repression. Despite this non-linear shape in regards to the probably of democratization occurring, Acemoglu and Robinson agree with Boix that the *threat* posed by the masses is increasing in inequality.

Thus though Boix and Acemoglu and Robinson disagree on the exact pattern democratization takes, they concur that rising inequality is likely to cause concern to the elites. As the benefits of redistribution to the lower classes begins to outweigh the benefits of staging a revolution, the specter of a mass uprising becomes a more real threat to the endurance of a non-democratic status quo favored by elites.

3 Theory

Under what conditions will an exogenous easing in trade lead to openness in a non-democracy? The argument forwarded here has three distinct elements: first, an exogenous easing of trade occurs, altering the relative prices in a domestic economy and increasing the inefficiencies of closure broadly speaking. Through a variety of mechanisms identified by Frieden and Rogowksi (1996) such as increases in the terms of trade and black market prices, the new external climate is communicated to the relevant domestic actors. Second, the easing of trade leads to a reinforcement of domestic cleavages regarding openness. As factor are assumed to be fully domestically mobile and as we are in the world of labor-rich developing countries, labor will push for further openness while capital will oppose it. Land may also be in favor of further openness but as the prices of domestically produced agricultural products are assumed to be critical to laborers' real wages, the impact of land abundance on cleavage formation is mixed. Third, given an exogenous shock, labor will mobilize in order to seek an increase in its income, either through democratization and taxation of the rich or trade liberalization and an increase in its factor returns. Where inequality is high, labor's threat to regime stability is seen as credible, but as both the elites and the masses prefer to avoid a costly conflict, they can agree to accept trade openness as an alterative equilibrium. These steps will be considered in turn below.

3.1 Exogenous Changes in the Cost of Trade

What does an exogenous easing in the cost of trade exactly mean here? And how does it affect closed economies that would appear to be insulated from such changes in the global economy? The idea as outlined in the literature review is taken from Frieden and Rogowski (1996). As was discussed previously, Frieden and Rogowski conceive of such an easing of trade as occurring when the costs decrease or the rewards increase of international transactions. These changes are a product of a number of forces such as technological change that lower the costs of transportation, improvements in infrastructure such as credit, insurance and forward markets that lower the costs associated with engaging in international behavior, a reduction of some restrictive government policies such as tariffs or NTBs or the creation of other government policies such as a stable international monetary

system. Further, economies of scale and international differences in total factor productivity lead to an easing in trade. Again, this process of easing is communicated to domestic actors through prices, and, more specifically, relative prices that indicate the benefit of engaging in one economic activity as opposed to another. Frieden and Rogowski consider both longer-term changes in prices brought about by the global price convergence a more open world market creates as well as the more temporally concentrated price shocks.

But how do price changes affect domestic actors otherwise insulated from the external economy? If, in a closed economy, governments undergo widespread distortionary practices such as subsidization and price-setting, how would individuals know that they stand to benefit from an improved external trade climate if the prices they face are drastically different from currently prevailing world prices? Frieden and Rogowski claim that these global price changes are communicated through shadow prices. For example, as domestic prices move above world prices, black market activity should accelerate and goods will become available at their 'true' price. Further, world prices "as transmitted through neighboring countries or along seacoasts, determine incentives to smuggle, sell on the black market, or migrate to a less restrictive state" (Frieden and Rogowski 1996, 30).

In summary, as exogenous forces make international transactions more profitable and less costly, relative prices communicated through shadow prices will communicate the new external environment into closed economies. The next question then becomes how an easing in trade will alter domestic cleavages in developing, closed economies.

3.2 Cleavage Formation

To model cleavage formation and change given an exogenous easing in trade, the dominant economic and political actors will be conceived of as holders of three factors: land, labor, and capital. It will be assumed that all factors are fully mobile, implying a Hecksher-Ohlin framework similar to that found in Rogowski (1989) and to the assumptions employed by Milner and Kubota (2005). The distinction between a specific-factors model, where distributional benefits are implied by the relative productivity of a sector in which a factor-holder is employed, as opposed to the mobile-factors model

employed here, is often conceived of as a time-horizon issue. When making decisions in the short-term, actors are generally considered to see themselves as specific to the industry in which they are employed. When making longer-term decisions, however, factor-holders see themselves as mobile in the long run and are thus more concerned with the impact of trade on their factor and not their present sector of employment (Mussa, 1974). Thus as the setting of the analysis at hand is one of institutional conflict, it seems appropriate to assume that actors will be considering their long-term interests, implying a mobile-factors model when considering the distributional impact of trade policy.

In a mobile-factors, Hecksher-Ohlin framework, the distributional benefits of trade policy to factor-holders are implied by the relative scarcity or abundance of their factor relative to the rest of the world. Given a lowering of a tariff, holders of factors that are abundant in a country relative to the rest of the world will find factor returns increase while holders of factors that are scarce in a country relative to the rest of the world will find their returns decrease (Stolper and Samuelson, 1941). If, for example, a country is labor-rich and land and capital scarce, greater exposure to trade will benefit holders of its abundant factor, labor, and harm holders of its scarce factors, land and capital. Further, this process need not be limited to tariff changes. As Rogowski (1989) argues, an exogenous easing in trade, or a decrease in the cost of international commercial transactions, acts in the same manner on domestic factor holders as does a decrease in the country's tariffs. Further, as per Frieden and Rogowski (1996), the impact of an exogenous easing is felt in closed as well as open economies.

As this model attempts to simplify and theorize about the behavior of domestic political actors in developing non-democracies, it will be assumed that these countries are labor abundant relative to the rest of the world and capital scarce. The relative scarcity or abundance of land, however, is variable. According to Baker (2006), however, allowing for nonhomothetic tastes in the Hecksher-Ohlin framework changes the implied distributional impact of trade. The goods that a country produces that are produced by processes that use the country's abundant factors intensely will see price increases domestically under openness; further, if these goods are heavily consumed by labor holders in that country, labor might see that its real wage increase implied by the increased

value of its domestic factor holdings is diminished or in fact reversed by the increased costs in its consumption bundle.

In order to address this issue, it is assumed that labor is largely concerned with the domestic price of agricultural goods, or goods that are produced using land intensely, and not with manufactured goods that heavily use labor and capital in production. As these countries are developing it is likely that the wages received by labor are very low and as such food will make up a substantial portion of labor's budget. If an easing in trade increases the cost of food domestically, labor's real wage, even if its returns to its factor of production are rising, may be flat or declining. Further, it is assumed that labor is unable or unwilling to substitute imported foodstuffs that replace the domestically-produced agriculture goods experiencing a price increase. Conversely, manufactured goods that are produced using capital intensely are less relevant to labor's real wage as these goods make up a much smaller portion of labor's consumption budget. The impact is that though land abundance may make trade more desirable to landholders, it may in fact make trade openness undesirable to labor assuming that labor consumes domestically produced food heavily. Thus land abundance's impact on trade cleavages is mixed as though it may creat support for openness by landholders given an exogenous easing in trade, it may also undermine the support of labor.

A final comment is necessary before the expected cleavages can be derived. The question at stake is not so much how the groups in the economy are likely to respond as a result of the changes to their returns as a result of an exogenous easing in trade but instead *how they think openness will effect them in the future*. This is in a sense a largely functionalist argument: the groups in the economy (and polity) perceive that trade has become a more profitable enterprise internationally. The groups then consider, given their position in the economy, how openness will benefit (or harm) them and then organize themselves appropriately to push for their desired policy, be it greater openness or greater protection. Thus the exogenous shock in the form of an easing in trade greatly increases the potential gains or losses from engaging in trade and domestic actors subsequently form preferences on how they think they will fare in the arena of international trade if they were fully exposed to its vicissitudes.

Given this discussion, the impact of an exogenous easing in trade on domestic preferences

in developing countries is as follows: as labor is an abundant factor, holders of labor will favor greater openness in order to attain the wage gains implied. Landholders themselves stand to benefit from greater openness in developing countries that are land abundant and, given signals that the international environment has become more hospitable to trade, will support opening the economy; however, laborers, or low-income residents in general, will find that their real wages will be diminished by the implied increase in the cost of land-intensive goods produced and consumed domestically and thus will be indifferent towards (or even opposed to) openness where land is an abundant factor, potentially cancelling out landholders' influence. Finally, as capital is assumed to be scarce in developing countries relative to the rest of the world, capital holders will see that their returns will shrink if the economy were to open and therefore oppose liberalization.

3.3 Crisis Bargaining

The question raised by the cleavages outlined above is under what conditions would the groups that lose from openness acquiesce to the demands of the potential winners? If the status quo is closure, it seems reasonable to assume that, in a non-democracy, closure is the preferred policy of the elites relevant to the endurance of the regime. As Buena de Mesquita et al. (1999) argue, in a closed political regime the ruling elite must only satisfy the small and relevant selectorate, or the group whose assent is required to ensure the ruling elites' continuing dominance at the top of the political structure. Thus capital holders and, where agriculture is scarce, landholders are likely to see their interests reflected in the extant coalitions that control trade policy. Under what conditions would the interests of the group that is seemingly outside of the selectorate, namely labor, become relevant to policy change?

The proposal put forward here is that a policy of openness that is preferred by the politically excluded masses can become politically viable despite the opposition of the beneficiaries from the status quo if the pro-openness masses can mount a credible threat to overthrow the extant regime. In brief, when labor can credibly claim to hold the power to start a revolution if the economy is not opened, and when the regime itself has been weakened by some exogenous shock, it becomes politically rational for the status quo bearers to take the losses to their factor returns in exchange

for avoiding the much greater costs implied by either broader political reforms and institutional alteration or a costly and uncertain civil war.

When is this revolutionary threat most credible? Two factors are directly relevant: inequality and exogenous shocks. When inequality is high, the costs of democratization are highest to the elite, as they will lose the most through redistributive taxation that favors the median voter. Further, at higher points of inequality, labor stands to gain the most for the costly enterprise of launching a rebellion. If a higher proportion of the national income is held in the hands of the political elite, extension of the suffrage and the power to tax will provide labor with much greater benefits. As discussed in the literature review, both Boix (2003) and Acemoglu and Robinson (2006) agree on the increasing revolutionary threat as inequality increases though they disagree over the nature of the probability of democratization actually occurring, implying that the credibility of the threat of revolution held by the masses is increasing in inequality.

Exogenous shocks to the country, be they economic, political, or both, serve to further strengthen labor's threat and to weaken the extant regime. In the Boix and Acemoglu and Robinson frameworks, unmodelled exogenous shocks serve as the impetus for collective action by the masses. When a shock occurs, for example a severe economic downturn or an internal threat to the regime's stability, labor may find the transient capacity to mobilize. Not only do these shocks increase the likelihood of mass mobilization, they also weaken the regime's ability to react effectively, stifling its capacity to nip the movement at its bud. Economic crises, for example, may limit the state's capacity to act or may divert its attention away from nascent domestic movements. Furthermore, the debate over what policy is most appropriate to handle the shock may lead to fractionalization of the elite, limiting the state's willingness to act quickly and decisively against a revolutionary threat. For the case at hand, such shocks may be attributed to or seen as a reason to move away from existing policies of economic closure and the attendant web of micro and macroeconomic interventions in the economy (Haggard and Kaufman, 1995). Similarly, an interstate war that ended in a defeat for a country could both weaken the overall economy and it could again bring in to question the viability of the current rulers. Thus both increasing inequality and the presence of regime-weakening or revolutionary-movement strengthening shocks increase the credibility of the

threat of institutional change.

The next step is indentifying how openness can act as a sufficient alternative to institutional change. For labor, the key goal is to increase its income at a minimal cost. The elite seeks to ensure regime stability and to limit the costs in incurs in doing so. Labor can achieved its goal either by an openness that increases its wages or by extension of the suffrage, through which it can tax the rich. If labor has been provided with openness, however, the increase it realizes in its wages will diminish its interest in democratization as inequality lowers and it stands to gain less through redistributive taxation. Further, though a revolutionary threat may be credible, acting on this threat implies a potentially great cost to the individual laborer. Even if labor knows that, in the aggregate, it is likely to succeed in a revolutionary movement, each individual sees that there is some chance that she will be harmed or perish during the fight; thus, even if she knows that after the fight she will be better off, she still fears the potentially dire consequences of an actual violent revolution.[3] Thus if the elite offers trade openness as an alternative to a violent conflict over institutional structure, labor will prefer this less costly means of securing an increase in its income. Without the revolutionary threat created by high inequality and a shock to the regime to both mobilize it and to back up its demands, however, labor will fail to push for either extension of the franchise or openness.

For the status quo power, openness clearly leads to a loss, as its returns will decrease when it is exposed to the global economy. Where inequality is high, however, the redistribution implied by democratization will be more costly to the status quo power than opening the economy to trade as all of its income will be taxed away, including the additional rents it secures through maintaining a closed economy. Thus, given sufficiently high inequality, it will prefer to maintain control over the taxation structure despite the losses it suffers in an open economy to avoid the greater losses it would suffer if labor was institutionally incorporated into the political decision making structure. Furthermore, even if the two alternative policies are relatively close in terms of their impact on capital-holders, just as labor fears the cost of a civil conflict, so too does capital fear the destruction

[3]For this logic to hold it must be assumed that both sides face some uncertainty in their prospects in a civil conflict in order for them to resort to violence rather than to simply negotiate an agreement a priori, an assumption made by both Boix (2003) and Acemoglu and Robinson (2006). For an expanded version of this logic in the interstate context see Fearon (1995).

of its domestic productive assets in such a situation. Thus where the threat of revolution is at its peak, capital may prefer to provide the concession of openness to labor, despite its cost to capital, in order to avoid both the cost of redistribution implied by democratization as well as the costs to its assets implied by a potential civil war.

To summarize the preceding two sections, it is argued that an exogenous easing in trade will alter the preferences of labor to favor openness, though capital holders will remain opposed. Though the landed elite may, where a country is land-abundant, favor openness as well, the impact of their support for openness is minimized by the impact of liberalization on the cost of domestic food and its negative impact on the real wages of labor. Further, given relatively high levels of inequality and some exogenous shock that mobilizes the masses and weakens the regime, labor and capital will agree to the outcome of openness as it provides labor with the wealth it seeks without the cost of civil war, a leading capital to choose the lesser of two evils, namely openness rather than democratization and redistributive taxation.

The following hypotheses generated by the theory are tested in the empirical section of the paper:

Hypothesis 1 *Given a developing non-democracy experiencing an exogenous easing in trade, a shock to regime stability should increase the probability of a domestic opening to trade.*

Hypothesis 2 *Given a developing non-democracy experiencing an exogenous easing in trade, higher inequality in that country should increase the probability of a domestic opening to trade.*

Hypothesis 3 *Given a developing non-democracy experiencing an exogenous easing in trade, the impact of higher inequality in that country on the probability of a domestic opening to trade should even greater if the country experienced an exogenous shock*

Hypothesis 4 *Given a developing non-democracy experiencing an exogenous easing in trade, land abundance either independently or in conjunction with a shock should have an indeterminate impact on the probability of a domestic opening to trade occurring.*

4 Survival Analysis

In order to test the causal story presented here across a number of countries and over an extended period of time, Milner and Kubota's panel data set of 179 developing countries from 1970 to 1999 was used to create a set of developing countries that either never opened their economies during the period of study or, after an initial period of closure, became open (Milner and Kubota, 2005). Of the 179 countries, 80 either remained closed for the entire period or opened at some point; of the 80 countries that were closed in 1970, 52 had opened by 1999. A full list of the countries included as well as the year the country opened (if applicable) and Polity IV regime score in either the year the country opened, or for countries that never opened, in 1999 is included in the appendix.

Though it initially seems like information is being discarded by taking a large panel data set and reducing this subset in order to undergo survival analysis, the nature of the dichotomous dependent variable explained requires such a transformation and an empirical approach. As is discussed below, the Opens variable, created by Sachs and Warner (1995) and updated by Horn Welch and Wacziarg (2008), measures when a country opens its economy based on five criteria, an event that occurs relatively rarely. Given that the likelihood of openness occurring across the sample in any given year is very low, an alternative to panel data estimators is desirable. According to Beck, Katz, and Tucker not only are binary-time-series-cross-section (BTSCS) data of the kind at hand "equivalent to grouped duration data with an observation interval of one," a variety of survival methods exists as well to estimate models "with grouped event history data where the observations may be temporally dependent" (Beck et al. 1998, 1265). If we think that an exogenous easing of trade is gradually occurring, increasing the likelihood of openness occurring given the presence of a number of other variables, it seems suitable to model the process as temporally dependent.

The survival models estimated use time varying covariates. Further, as the theory has little to say about countries that open their economy only to subsequently close it again, an event that occurred very rarely in the dataset, once a country opened its economy as measured by the dependent variable discussed below, all subsequent observations for that country were removed from the sample.

Table 1: Summary Statistics

Variable	Obs	Mean	S.d.	Min	Max
Opens	1878	0.027	0.163	0	1
Polity IV	1749	-2.972	6.591	-10	10
Annual TOT Change	1882	0.673	0.469	0	1
Log(Pop. Density)	1860	3.357	1.278	0.077	6.7999
Gini	1580	44.763	9.849	20.88	63.7
Crisis	1882	0.4277	0.494	0	1
Annual GDP Change	2221	0.019	0.712	-0.341	0.451
Gov't Exp./GDP	335	14.60	6.063	3.087	45.262
GDP/cap. 95 USD	1649	1297	1697	84.72	12283

4.1 Dependent Variable

All variables, the source and nature of which are discussed below, are summarized in Table 1.

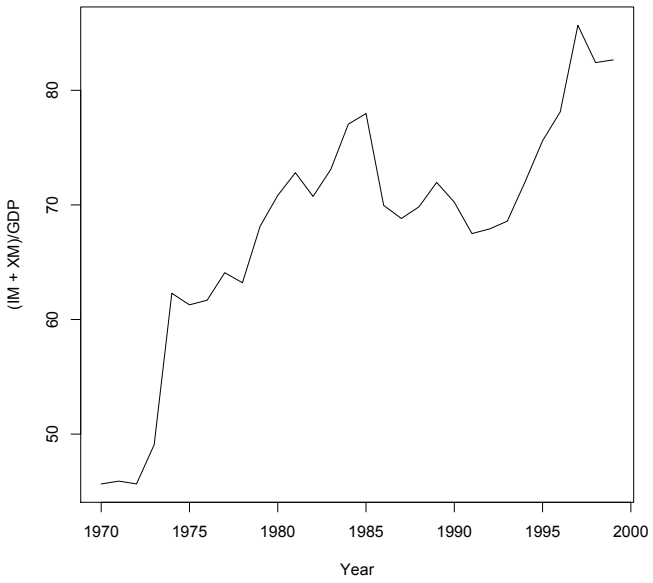
In survival analysis, the dependent variable is the time until an event occurs, or using the proper survival terminology, when failure occurs. To test the hypotheses proposed here, the dependent variable thus becomes the amount of time that elapses until a country opens its economy. The variable used to measure whether or not a country opened its economy to trade in a given year is Opens. This dichotomous openness variable was developed and coded by Sachs and Warner (1995) and updated by Horn Welch and Wacziarg (2008). A country is considered closed, i.e. has a value of 0 for Opensin a given year, when *any* of the following are true: first, NTBs cover greater than or equal to 40% of trade; second, tariffs average 40% or greater; third, the black market exchange rate depreciated by 20% or more during the 1970s or 1980s; fourth, the country possessed a socialist economy system; and fifth, the country had a state monopoly on exports.

This variable is not ideal. Outside of tariffs and NTBs, it is not clear that the remaining elements are related to the hypotheses being tested. For example, the theory has little to say about the conditions under which a given country would opt to abandon a socialist economic system. A superior variable would be one that measures only whether or not a country has either high tariffs or high NTBs in a given year and considers the economy as closed if this is the case. Unfortunately, though data are readily available on the tariff side, I was unable to find a comprehensive set of NTB data that sufficiently covers developing countries. Thus more robust results might be found if data on this more precise dependent variable was collected.

4.2 Independent Variables

In the analysis that follows, an exogenous easing in trade is considered to be occurring rather than being expressly incorporated in to the statistical models as an independent variable. Such an assertion seems natural considering the trend towards increasing global openness during the period under study. To provide some empirical weight to this claim an approach employed by Lake and O'Mahoney (2004) is repeated here. Using the authors' dataset, a measure of economic openness for all North American and European countries between the years of 1970 and 1999, was calculated annually. The index takes the form of $\frac{1}{n} \times \sum_{i=1}^{n} \left(\frac{XM_i + IM_i}{GDP_i} \right)$, where n is the number of North American and European countries with observations in a given year, XM_i and IM_i are a given country's exports and imports in a given year and GDP_i is that country's GDP. The idea behind this index is that increasing leveels of openness in developed countries implies an easing in the global trading environment. The measure is plotted below in Figure 2. As we see, despite a few periods of decline occurring roughly during downturns in the global business cycle, the trend is upward and very large, implying that international trade is becoming easier over the period studied.

Figure 2: North American and European Openness Index, 1970-1999



Next, in order to determine whether or not a country is considered a democracy, the political regime variable from the Polity III and Polity IV datasets was used. This variable, imported from Milner and Kubota (2005)'s data set and devised by Gurr et al. (1990) and Jaggers and Gurr (1995), is a 20 point scale ranging from -10 for countries with the most autocratic characteristics to 10 for countries with the most democratic characteristics. For each country, data are collected on the competitiveness of process of chief executive selection, the openness of the process, the extent to which a chief executive's decision-making authority is limited by institutional constraints, the competitiveness of political participation within a country, and the extent to which political participation is governed by binding rules. After creating two 11-point indices of a countrys democratic and autocratic characteristics, the difference between these indices is calculated, creating the 20 point scale discussed above. As the theory does not have any clear predictions regarding the impact varying levels of autocracy, any country with a Polity IV score less than 0 is considered a non-democracy. A dummy variable, Politydummy, was created annually for each country with a 1 indicating that a country is a non-democracy and a 0 if it is not.

Levels of inequality are measured with the Gini variable taken from Feng et al. (2005)'s time-series inequality data set. Feng et al. calculate their measure using the Deininger and Squire (1996) inequality data as a base and predict missing values with an OLS model that employs GDP per capita, literacy rate, relative political extraction, and regional control variables. Feng et al.'s data cover more countries for more years than other available measures allowing for the elimination of missing data.

An ideal crisis variable would take in to account a variety of crises both in the economic and political spheres. Such a variable would include severe economic shocks as well as domestic political turmoil such as strikes and protests and elite-level disruptions such as coups or assassinations. Due to data availability issues and time constraints, however, I was only able to employ measures of economic crises and not political crises. Though this may lead to a downward bias in the results, it seems likely that a measure of strikes or protests would likely be highly collinear with a measure of economic shocks, though coup data would be a helpful addition. Thus the Crisis variable is coded as 1 for a given country in a given year if the country has a 1 for either of the following two

measures in that year: first, the economic crisis variable taken from Milner and Kubota is coded as 1 "if a country's inflation rate is 40% or more and it increases by 25% or more from the year before, or per capita GDP falls by 15% or more from the second year" (Milner and Kubota 2005, 123). Second, the balance of payments crisis measure is coded as 1 when a country's international reserves fall to less than the equivalent of the value of three months of imports. This variable is also imported from Milner and Kubota (2005).

Finally, in order to measure land abundance or scarcity, a ln(Population Density) variable was created using data readily available in the Milner and Kubota (2005) data set. For each country year, the country's total population was divided by its area in square kilometers. The log of this value was then taken to address a skewed distribution. The logic behind this variable is that a higher level of population density in a country is indicative of lower land scarcity relative to the rest of the world. A superior alternative variable would use arable land as the denominator and not total land area; time constraints unfortunately precluded this approach.

4.3 Control Variables

Though a large number of variables are obvious contenders for use as controls, efforts at estimating the empirical models below with additional variables often led to an inability to reach convergence, likely due to the decreasing number of observations as the number of controls increased. A more robust set of empirical tests could be undertaken to strengthen the results through more data collection. Two variables that may better explain the decision to open are included as control variables: first, government expenditure as a percentage of GDP (Govt Exp./GDP) is used as a number of authors have argued that not only is generous public spending often correlated with openness to trade, it is also often a political requirement that precedes openness (Rodrik 1998, Adsara and Boix 2002). This variable, taken from the World Bank's World Development Indicators dataset, measures general government consumption including government purchasing, public employment, national defense, and security expenditures. Second, GDP per capita in 1995 US dollars (GDP/cap. 95 USD), taken from Milner and Kubota (2005), is used, as more developed countries are more likely to be able to weather the dislocations caused by openness and as countries with

weaker economies and less extractive capacity often find it easier to raise revenue through tariffs and levies rather than through other forms of taxation. Thus as economies develop they tend to move away from tariffs and toward other forms of taxation (Rodrik 1998).

4.4 Empirical Strategy

As discussed above, the approach employed is one of duration analysis where the dependent variable is the time until a given country opens its economy as judged by the Opens variable. As the international climate for trade is assumed to be improving over time, no variable is included in any model to estimate its direct impact. Further, as all hypotheses are related to autocracies, the models are limited to observations where a country has a Polity IV value of less than 0, i.e. it is not a democracy. As a first cut, Kaplan-Meier survival estimates are computed under a number of conditions to test the proposed relationships. Next, a series of Cox proportional hazards models are estimated with time varying covariates in order to get more precise results. Although expressly modeling the impact of time on the different variables may be appealing in this case where ease of trade is increasing in time, as Box-Steffensmeier and Jones (2004) argue, social science theories rarely allow for a clear identification of an appropriate distributional form to use in models that parameterize time.[4] Further, in order to address to possibility that the observations with a given unit (country) are serially dependent, robust standard errors were estimated. Finally in all tables the hazard ratio (not coefficient estimates) and p-values (not standard errors) are reported in order to assist with interpretation and inference. Hazard rates that are greater than 1 indicate that the hazard rate is increasing as a function of the variable, implying a lower survival time; hazard rates that are less than 1 have the opposite meaning.

4.5 Kaplan-Meier Estimates

The Kaplan-Meier product limit estimator is a nonparametric method of calculating survival functions. When the Kaplan-Meier estimator is plotted, a downward-sloping curve is indicative of units, in this case countries, having a decreasing likelihood of surviving at successive periods in time given

[4]The models below were also estimated using the generalized gamma model in order to determine whether or not a particular parametric model was appropriate; unfortunately, no model was clearly identified by this process.

the number of countries that have survived to that time period. If multiple estimates are produced for different subgroups of a sample, one group is shown as having a lower survival rate than the other if its Kaplan-Meier curve is below that of the other group at a given point in time. For example, if a curve for subgroup i is beneath that of subgroup j at a given point in time, it can be said that units in subgroup i are less likely to survive than units in subgroup j.

First, for illustrative purposes, Kaplan-Meier estimates were produced for the entire sample, as shown in Plot 1 of Figure 3. Here we see that for all countries, the likelihood of surviving (remaining closed) is stable and high over the first 15 periods of study, 1970 to 1985. After that halfway point, however, the probability of survival drops precipitously. Thus while the probability of remaining closed appeared very high in the first half of the period of study, it diminishes severely beginning in roughly 1985 and then appears to be leveling out in the late 1990s. In Plot 2 of Figure 3, separate curves are shown for democracies and non-democracies, where democracies are considered as having a Polity IV score of 0 or above. Confirming the results of Milner and Kubota (2005), we see that democracies were much less likely to remain closed for the majority of the period studied.

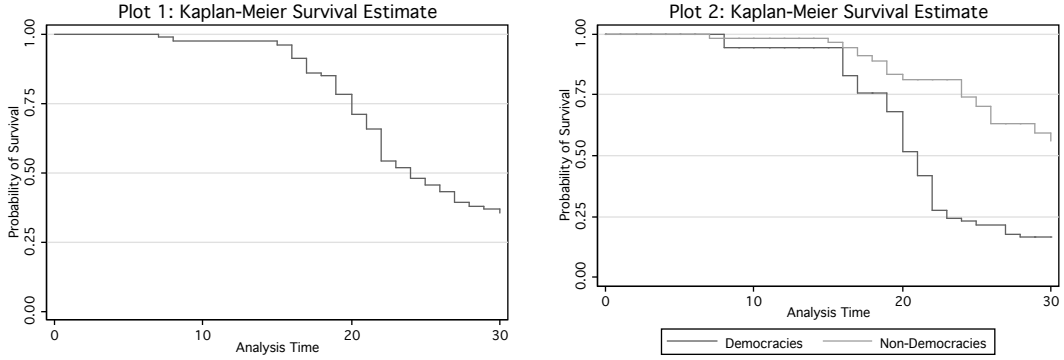


Figure 3: Kaplan-Meier Estimates for Entire Sample

Next, Kaplan-Meier estimates were produced for subsets of non-democracies in order to give hypotheses 1, 2, and 4 an initial test. All observations for countries with a value of 0 on Politydummy were excluded and Kaplan-Meier estimates were created, parsing out countries that experienced a crisis in a given year versus those that did not (Figure 4, Plot 1), countries with a gini value greater than the sample average in a given year as opposed to those equal to or below the average (Figure 4, Plot 2), and finally countries with population densities that were lower than the mean

minus one standard deviation of the annual global population density average as opposed to all other countries (Figure 4, Plot 3).

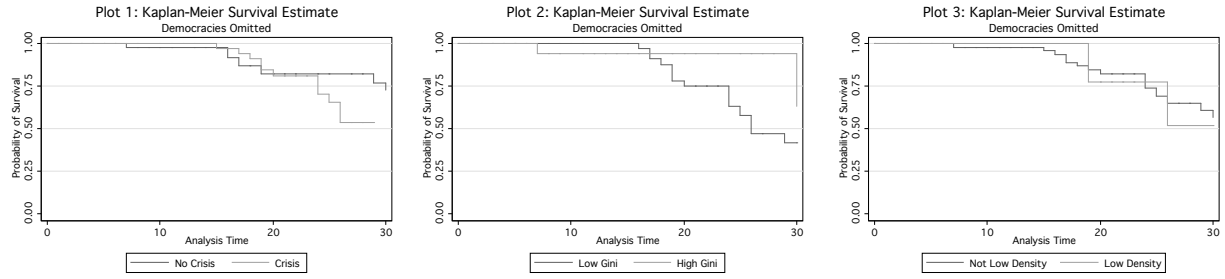


Figure 4: Kaplan-Meier Estimates for Subsamples of Non-Democracies

In the first case, we see that the effect of experiencing a crisis is initially indeterminate on the survival function, but towards the end of the period studied, experiencing a crisis significantly decreases the likelihood of surviving, providing some support for the hypothesized link between crises and openness in non-democracies. In the second case, the results are much less promising. Again, after an initial term of indeterminacy, having a higher than average gini, indicating greater inequality, in fact appears to increase the likelihood of surviving, directly contradicting the hypothesized link between inequality and the likelihood of opening in non-democracies. Finally, in the third case, it seems that countries with the lowest population densities are less likely to fail, supporting the claim that land abundance's impact is perhaps strongly mitigated by the negative effect of rising food prices on labor's real wages given openness in land-abundant developing non-democracies.

As these graphs fail to incorporate plots of the statistical significance of the Kaplan-Meier curves, they must be taken as illustrative rather than statistically robust evidence. In order to attain more sound estimates, Cox proportional hazards models are estimated below.

4.6 Cox Proportional Hazards Models

4.6.1 Testing Hypotheses 1, 2 and 4

To test the first two hypotheses, namely that, given an exogenous easing in trade, an exogenous shock (hypothesis 1) or inequality (hypothesis 2) increase the likelihood of openness in developing non-democracies, the Crisis and Gini variables were entered in the first set of duration models. For

these hypotheses to hold, the estimated hazard ratios should be statistically significant and greater than 1. Further, to test for the indeterminacy of land abundance, the ln(Pop. Density) variable was included; here, statistical insignificance is expected if hypothesis 4 is correct.

Table 2: Effect of Crisis, Inequality, and Land Scarcity on Trade Opening in Non-Democracies

	Model 1	Model 2	Model 3
Crisis	1.033	1.091**	1.071**
	(0.180)	(0.006)	(0.001)
Gini	0.998	0.997^{+}	0.998
	(0.186)	(0.073)	(0.354)
ln(Pop. Density)	0.991	0.992	0.977*
	(0.274)	(0.582)	(0.025)
Gov't Exp./GDP		0.996	0.994
		(0.568)	(0.341)
GDP/cap. 95 USD			0.999^{+}
			(0.068)
Observations	1044	156	156
Ln pseudolikelihood	−51.13	−16.12	−13.36
Chi-squared	5.441	12.19	33.68
Pr > chi-squared	0.142	0.016	0.000

Estimated hazard ratios reported; standard errors are Huber-White robust p-values in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results are shown in Models 1 through 3 of Table 2. Model 1 includes only the variables of interest without any controls included. Here none of the variables are statistically significant; furthermore, the hypothesis that all the variables are not statistically from 0 cannot be rejected. In Model 2, however, where the government expenditure control is included, both the Crisis and Gini variables gain significance. While Crisis is significant and positive, as is predicted by hypothesis 1, Gini is significant (only at the $p < 0.10$ level, however) and *negative*, softly rejecting hypothesis 2. Ln(Population Density) remains insignificant. Moving to Model 3 where all controls are included, Crisis remains strongly significant and positive while the significance of Gini disappears. Ln(Population Density), however, becomes significant and positive, giving some support that would

allow hypothesis 4 to be rejected. In summary, while hypothesis 1 seems to be supported here given the inclusion of some controls, the results regarding hypotheses 2 and 4 are mixed.

To get a sense of the magnitude of these estimated hazard ratios, the percentage changes implied by moving the variables of interest from their minimums to their maximums in the different models are displayed in Table 3. To calculate the percentage change in an estimated hazard rate, the following formula was used:

$$\left[\frac{e^{\beta*(x_i=X_{max})} - e^{\beta*(x_i=X_{min})}}{e^{\beta*(x_i=X_{max})}}\right] \times 100$$

Here, x_i implies a given variable of interest, and X_{min} and X_{max} are that variable's minimum and maximum values. As percentage changes were only calculated for statistically significant variables, Model 1 is excluded. In Model 2, the presence of a crisis increases the hazard rate by 3% while moving from the minimum to maximum gini value decreases the hazard rate by 8.3%. In Model 3, the magnitude of a crisis more than doubles as its presence now implies a 7.2% increase in the hazard rate. Moving population density from its minimum to its maximum decreases the hazard rate by 16.1%, providing strong support for disregarding consumption effects in the theoretical model. Finally, moving GDP per capita from its minimum to its maximum has a small effect as it only implies as 0.5% decrease in the hazard rate.

Table 3: Percent Change in Hazard Rate From Moving Variables

Variable	**Min**	**Max**	**Model 2**	**Model 3**
Crisis	0	1	3.2	7.2
Gini	21	64	-8.3	-
ln(Pop. Density)	0.1	6.8	-	-16.1
GDP/cap in 95 USD	3.1	45.3	-	-0.5

In summary, this section has found some support for the hypothesis that a crisis increases the probability of a developing non-democracy openings its economy given an exogenous easing in trade as its estimated hazard rate is always positive and in two out of three models, statistically significant. Mixed evidence is found for the impact of inequality as this variable is only significant in one model and its sign is in the opposite direction as is predicted. Finally, as population density is always found to have a positive relationship though one that is only significant in the third model,

the evidence again here is mixed though it appears to lend some support to rejecting hypothesis 4.

4.6.2 Testing Hypothesis 3

Hypothesis 3 states that the impact of inequality on the probability of a developing non-democracy opening should be increasing given a crisis and an exogenous easing in trade. In order to test this conditional hypothesis, and also to further probe hypothesis 4, two interaction terms were made: Crisis x Gini and Crisis x ln(Population Density). Thus hypothesis 3 expects an estimated hazard ratio that is greater than 1 (positive) for the Crisis x Gini interaction term; the hazard ratio for the second interaction term is expected to be insignificant by hypothesis 4.

Table 4: Effect of Interaction Terms on Trade Opening in Non-Democracies

	Model 4	Model 5	Model 6	Model 7
Crisis x Gini	0.999		0.999	0.997
	(0.474)		(0.653)	(0.430)
Crisis x ln(Pop. Density)		0.997	0.995	0.996
		(0.873)	(0.839)	(0.913)
Crisis	1.066	1.049	1.080	1.189
	(0.225)	(0.524)	(0.576)	(0.455)
Gini	0.999		0.992	0.999
	(0.635)		(0.621)	(0.991)
ln(Pop. Density)		0.999	0.994	0.982
		(0.996)	(0.794)	(0.635)
Gov't Exp./GDP				0.994
				(0.308)
GDP/cap. 95 USD				0.999
				(0.127)
Observations	1044	1266	1044	156
Ln pseudolikelihood	−51.44	−58.90	−51.09	−13.22
Chi-squared	2.741	2.783	7.517	43.66
Pr > chi-squared	0.433	0.426	0.184	0.000

Estimated hazard ratios reported; standard errors are Huber-White robust
p-values in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Test of Proportional Hazards Assumption

Variable	ρ	χ^2	**df**	**Prob** $> \chi^2$
Crisis	-0.816	2.89	1	0.089
Gini	0.611	1.90	1	0.168
ln(Pop. Density)	-0.288	0.18	1	0.669
Govt. Exp./GDP	0.721	4.87	1	0.273
GDP/cap in 95 USD	-0.816	7.19	1	0.073
Global Test	-	9.28	5	0.098

Four separate Cox proportional hazards models were estimated and the results are reported in Table 4. Model 4 includes only the Crisis x Gini interaction terms and its constitutive variables while Model 5 is the same exercise but for the population density interaction. Models 6 and 7 include the additional control variables. Unfortunately, no variables were ever found to be significant across any of these specifications and only Model 7 allows for a rejection of the null hypothesis that all coefficients are jointly equal to 0. Thus this exercise seems to reject hypothesis 3 and though it could be seen as providing some support in favor of hypothesis 4, the lackluster results across all specifications bring any inference in to doubt.

4.6.3 Specification Tests

Out of the 7 models estimated, Model 3 appears to be the strongest. In order to accept its results, however, the underlying proportional hazards assumption that is central to Cox models must be tested. According to this assumption, parameters are stable over time. If a change in a covariate has a different effect at different points in time, the assumption is violated. In order to test this assumption, Box-Steffensmeier et al. (2003) suggest examining the correlation between the residuals estimated from a given Cox proportional hazards model and time. For the proportional hazards assumption to hold, the correlation both particular variables and time must not be statistically significantly different from zero; this same relationship must hold in a global test of all covariates employed in a model. Thus the proportionality assumption is accepted in Model 3.

The proportional hazards assumption was tested by regressing the log of time on the scaled Schoenfeld residuals estimated in Model 3. Results are reported in Table 5. As we see, this model passes the global test (the relationship between all variables in the model and the log of

time is jointly statistically indistinguishable from 0) and every variable included passes individual proportionality tests.

4.7 Summary of Empirical Results

The results of the various empirical tests provide strong support for hypothesis 1, that crises increase the probability of non-democracies opening their economies to trade given an exogenous easing. The Kaplan-Meier estimates that split the sample of non-democracies in to countries experiencing crises and those that are not show that countries with crises showed a lower survival rate for the crisis group. Further, when the crisis variable was found to be significant across the Cox models, its sign was correct. At best we can say that the presence of a crisis increases the probability of a non-democracy opening by 7.2%.

Hypothesis 2 found little support in the empirical models. The Kaplan-Meier estimate showed countries with high inequality as being more resilient to openness than all other countries; in fact, it appears that countries with high inequality rarely if ever opened their economies. Further, in the one Cox model were the Gini variable was significant, it was only barely so, and its impact was negative rather than positive. The best estimate of the impact of inequality on the likelihood of a non-democracy opening is that moving from the global minimum to the global maximum Gini value decreases the probability of surviving by 8.3%.

Hypothesis 3 can be roundly rejected. In no Cox model was the interaction term of Crisis and Gini statistically significant.

Weak support was found for hypothesis 4. In the Kaplan-Meier estimates, countries with low population density (land scarce) were found to have a lower probability of surviving, a result that is opposite to what would be predicted by a theory that allowed for homothetic tests. Across the Cox models, however, the log of population density was only significant in one case and it was negative rather than positive. Thus the impact of land abundance seem indeterminate, though it is hard to attribute meaning to a statistically insignificant variable in a number of models that were globally insignificant.

5 Concluding Remarks

This paper has provided a theoretical framework with which to understand the interaction of domestic pressures for trade liberalization and democratic reform in increasing the likelihood of economic openness in developing non-democracies. To reiterate the central argument, given a developing dictatorship with high levels of income inequality and the presence of an exogenous shock, labor-holders are able to coerce elite capital holders in to providing redistribution through trade liberalization by use of the threat of a revolutionary institutional change. The evidence, found in survival analysis of data on 80 developing countries during the period of 1970-1999, supports the conjectures that crises are positively related with the likelihood of liberalization and that land abundance has little impact. The impact of inequality on liberalization, both independently and in conjunction with crises, is supported empirically.

The results found may be significantly strengthened by the creation of a more precise dependent variable as well as an additional political crisis variable. As the dependent variable of openness is one that changes very rarely and one that requires a number of country characteristics that bear little relevance to theory to be present to be recorded as a 1, recasting this variable as one that only captures the point when a country's tariffs and NTB coverage ratio falls beneath a certain threshold. Further, as the variable that measures crises only examines economic crises (though in most cases it is likely that these economic crises engendered subsequent political crises), it likely biases the results downwards by ignoring political crises such as coups that would embolden the masses and weaken the elites. Further, the comparison of specific cases of developing non-democracies that experienced crises and opted to open their economies and those that did not would help is testing the validity of the causal mechanisms developed in the theoretical section of the paper.

Appendix

Table 6: Country Sample

Country	Opened	Year	Polity Score
Algeria	0	-	-2
Angola	0	-	-3
Argentina	1	1991	7
Bangladesh	1	1996	6
Benin	1	1990	-
Bolivia	1	1985	9
Botswana	0	-	9
Brazil	1	1991	8
Burkina Faso	1	1998	-1
Burundi	1	1999	-2
Cameroon	1	1993	-4
Cape Verde	1	1991	-
Central African Republic	0	1999	6
Chad	0	-	-2
China	0	-	-7
Chile	1	1976	-7
Colombia	1	1986	8
Congo	0	-	-6
Costa Rica	1	1986	10
Cote d'Ivoire	1	1994	-6
Dominican Republic	1	1992	6
Ecuador	1	1991	9
Egypt	0	-	-6
El Salvador	1	1989	6
Ethiopia	1	1996	1
Gabon	0	-	-4
Gambia	1	1985	7
Ghana	1	1985	-7
Guatemala	1	1988	3
Guinea	1	1986	-7
Guinea Bissau	1	1987	-8
Guyana	1	1988	-7
Haiti	0	-	6
Honduras	1	1991	6
Hungary	1	1990	10
India	0	-	9
Iran	0	-	3
Iraq	0	-	-9
Israel	1	1985	9

Country	Opened	Year	Polity Score
Jamaica	1	1989	10
Kenya	1	1993	-5
Lesotho	0	-	-
Liberia	0	-	0
Madagascar	1	1996	9
Malawi	0	-	7
Mali	1	1988	-7
Mauritania	1	1995	-6
Mexico	1	1986	-3
Morocco	1	1984	-8
Mozambique	1	1997	6
Myanmar	0	-	-7
Nepal	1	1991	5
Nicaragua	1	1991	6
Niger	1	1994	8
Nigeria	0	-	4
Panama	0	-	7
Pakistan	0	-	-6
Papua New Guinea	0	-	10
Paraguay	1	1989	2
Peru	1	1991	8
Philippines	1	1988	8
Poland	1	1990	5
Rwanda	0	-	-4
Senegal	0	-	-1
Sierra Leone	0	-	-
Somalia	0	-	-
SouthAfrica	1	1991	5
Swaziland	0	-	-9
Syria	0	-	-9
Tanzania	1	1995	-1
Togo	0	-	-2
Trinidad&Tobago	1	1992	9
Tunisia	1	1989	-5
Turkey	1	1989	9
Uganda	1	1988	-7
Uruguay	1	1990	10
Venezuela	1	1989	9
Zaire	0	-	-
Zambia	1	1993	6
Zimbabwe	0	-	-6
80	52	-	-

References

Acemoglu, Daron and James A. Robinson. 2006. *Economic Origins of Dictatorship and Democracy.* New York: Cambridge University Press.

Adsera, Alicia and Carles Boix. 2002. "Trade, Democracy, and the Size of the Public Sector: The Political Underpinnings of Openness." *International Organization* 56(2):229–262.

Alt, James E. and Michael Gilligan. 1994. "The Political Economy of Trading States: Factor Specificity, Collective Action Problems, and Domestic Political Institutions." *The Journal of Political Philosophy* 2(20):165–192.

Baker, Andy. 2006. "Who Wants to Globalize? Consumer Tastes and Labor Markers in a Theory of Trade Policy Beliefs." *American Journal of Political Science* 49(4):925–939.

Beaulieu, Eugene. 2002. "Factor or Industry Cleavages in Trade Policy? An Empirical Analysis of the Stolper-Samuelson Theorem." *Economics and Politics* 14(2):99–131.

Beck, Nathaniel, Jonathan N. Katz and Richard Tucker. 1998. "Taking Time Seriously: Times-Series-Cross-Section Analysis with a Binary Dependent Variable." *American Journal of Political Science* 42(4):1260–1288.

Boix, Carles. 2003. *Democracy and Redistribution.* New York: Cambridge University Press.

Box-Steffensmeier, Janet M. and Bradford S. Jones. 2004. *Event History Modelling: A Guide for Social Scientists.* New York: Cambridge University Press.

Box-Steffensmeier, Janet M., Dan Reiter and Christopher Zorn. 2003. "Nonproportional Hazards and Event History Analysis in International Relations." *Journal of Conflict Resolution* 47(1):33–53.

Bueno de Mesquita, Bruce, James D. Morrow, Randolph M. Siverson and Alastair Smith. 1999. "An Institutional Explanation of the Democratic Peace." *The American Political Science Review* 93(4):791–807.

Deininger, Klaus and Lyn Squire. 1996. "Measuring Income Inequality: A New Data Set." *World Bank Economic Review* 10(3):565–591.

Fearon, James D. 1995. "Rationalist Exlpanations for War." *International Organization* 49(3):379–414.

Feng, Yi, Jacek Kugler and Paul Zak. 2005. "Demographic Transition, Income Distribution and Politics. A Model of Economic Development." under review: Contemporary Economic Policy.

Frieden, Jeffry A. and Ronald Rogowski. 1996. The Impact of the International Economy on national Policies: An Analytical Overview. In *Internationalization and Domestic Politics*. New York: Cambridge University Press pp. 25–47.

Goldstein, Judith, Douglas Rivers and Michael Tomz. 2007. "Institutions in International Relations: Understanding the Effects of the GATT and the WTO on World Trade." *International Organization* 61:37–67.

Gourevitch, Peter. 1986. *Politics in Hard Times: Comparative Responses to International Economic Crises*. Ithaca, NY: Cornell University Press.

Gurr, Ted Robert, Keith Jaggers and Will H. Moore. 1990. *Polity II: Political Structures and Regimes Change, 1800-1986*. Ann Arbor, Mich: Inter-University Consortium for Political and Social Research.

Haggard, Stephan and Robert R. Kaufman. 1995. *The Political Economy of Democratic Transitions*. Princeton, N.J.: Princeton University Press.

Haggard, Stephan and Steven Webb, eds. 1994. *Voting for Reform: Democracy, Political Liberalization, and Economic Adjustment*. New York: Oxford University Press.

Hiscox, Michael J. 2002. "Commerce, Coalitions, and Factor Mobility: Evidence from Congressional Votes on Trade Legislation." *American Political Science Review* 96(3):593–608.

Huntington, Samuel P. 1991. *The Third Wave: Democratization in the Late Twentieth Century*. London: University of Oklahoma Press.

Irwin, Douglas. 1996. Industry or Class Cleavages Over Trade Policy? Evidence from the British General Election of 1923. In *Political Economy of Trade Policy: Essays in Honor of Jagdish Bhagwati*, ed. Robert Feenstra, Gene Grossman and Douglas Irwin. MIT Press.

Jaggers, Keith and Ted Robert Gurr. 1995. "Tracking Democracy's Third Wave with the Polity III Data." *Journal of Peace Research* 32(4):469–482.

Kono, Daniel Y. 2006. "Optimal Obfuscation: Democracy and Trade Policy Transparency." *American Political Science Review* 100(3):369–384.

Lake, David A. and Angela O'Mahony. 2004. "The Incredible Shrinking State: Explaining Change in the Territorial Size of Countries." *Journal of Conflict Resolution* 48(5):699–722.

Mansfield, Edward, Helen Milner and Peter Rosendorff. 2002. "Why Democracies Cooperate More: Electoral Control and International Trade Agreements." *International Organization* 59(1):107–143.

Milner, Helen and Keiko Kubota. 2005. "Why the Move to Free Trade? Democracy and Trade Policy in the Developing Countries." *International Organization* 59(1):107–143.

Mussa, Michael. 1974. "Tariffs and the Distribution of Income: The Importance of Factor Specificity, Substitutability, and Intensity in the Short and Long Run." *Journal of Political Economy* 82(6):1191–1203.

O'Donnell, Guillermo and Philippe C. Schmitter. 1986. *Transitions From Authoritarian Rule: Tentative Conclusions about Uncertain Democracies*. Baltimore: Johns Hopkins Press.

Przeworski, Adam, Michael Alvarez, Jose Antonio Cheibub and Fernando Limongi. 2000. *Democracy and Development: Political Institutions and Well-Being in the World, 1950-1990*. Cambridge: Cambridge University Press.

Rodrik, Dani. 1997. *Handbook of International Economics*. Vol. 3 New York: North Holland chapter Political Economy of Trade Policy, pp. 1457–1495.

Rodrik, Dani. 1998. "Why Do More Open Economies Have Bigger Governments?" *Journal of Political Economy* 106(5):997–1032.

Rogowski, Ronald. 1989. *Commerce and Coalitions: How Trade Affects Domestic Political Alignments*. Princeton, N.J.: Princeton University Press.

Sachs, Jeffrey and Andrew Warner. 1995. "Economic Reform and the Process of Global Integration." *Brookings Papers on Economic Activity* 1:1–118.

Stolper, Wolfgang F. and Paul A. Samuelson. 1941. "Protection and Real Wages." *The Review of Economic Studies* 9(1):58–73.

Wacziard, Romain and Karen Horn Welch. 2008. "Trade Liberalization and Growth: New Evidence." *World Bank Economic Review* 22(2):187–231.

World Development Indicators. Various Years. Technical report World Bank Washington, D.C.: .