You Reap What You Sow:

Agricultural Bias and the Electoral Politics of

Democratic Sovereign Default

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ABSTRACT

When faced with fiscal crisis, why do some democracies successfully adjust, while others are forced to default on their sovereign debt? This paper identifies a *rural electoral bias* in democratic politics that provides agricultural producers with disproportionate, and distorting, price subsidies, and also suggests that the potential loss of rural votes in the case of removing these subsidies is likely to make incumbents more willing to face the long-term economic costs of debt default rather than the short-term survival costs of angering crucial rural electors. After formalizing this idea, I test my main claim that more rural democracies should be more likely to default on their debt, even after controlling for a host of alternate economic explanations, using panel data covering 55 countries over 40 years. I then test an additional set of observable implications, derived from the formal model, by looking at important subsamples of the data. I illustrate the logic of this mechanism in the model through a detailed historical case of democratic debt default in Turkey, identifying that agricultural support prices were indeed major targets of reform by the IMF during separate fiscal crises, and that unwillingness to offend rural voters by removing these subsidies played a key role in the government's ultimate decision to default.

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1 Introduction

One of the clearest outcomes of the Great Recession has been to move discussion over fiscal politics from the periphery to the core of both popular and academic focus. A common component of debate over the difficult fiscal environment most countries face today is the question of debt default: if structural adjustment proves politically infeasible, will a given country be forced to default on its sovereign debt?[1] Yet while it has become increasingly clear that responses during times of fiscal crisis are matters of great political importance, our understanding of the political dynamics of debt default is still poorly developed. This paper presents a novel theory of democratic default that emphasizes rural electoral biases in democracies as an important determinant of their inability to adjust to fiscal crises.

There exists a well-developed body of work that documents the economic costs of sovereign debt default, including loss of access to credit markets (Eaton and Gersovitz 1981), trade penalties (Bulow and Rogoff 1989; Rose 2005), or greatly increased borrowing rates (Tomz 2007; Das, Papaioannou and Trebesch 2012). For any forward-looking politician who wishes to maximize access to future revenues (regardless of his or her desired use for such funds), the decision to default is therefore generally suboptimal. It is only when restructuring efforts become particularly onerous for politically-important domestic actors, especially those that can affect the survival of incumbent executives, that politicians may begin to consider default preferable to restructuring. While this claim is relatively straightforward theoretically, the devil (of course) is in the details: how do we identify which groups in a society are politically important, and how do we know which issue areas are likely to be resistant to change?

In work explaining debt default in non-democracies, Ballard-Rosa (2014) argues that autocratic elites care about ordinary citizen interests only to the degree that these citizens

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[1] As an incomplete list of countries where the specter of default looms large, see recent accounts of Greece, Cyprus, Portugal, Egypt, Iceland, Spain, Italy, Ecuador, and Slovakia, not to mention the continued flirtation with insolvency in the United States as political gridlock forces the country to lurch from one fiscal deadline to another.

can credibly threaten regime stability; standard collective action accounts mean that this limited attention to citizen interests leads to urban bias in autocracies, particularly in the form of reduced food prices for poor urban consumers.[2] This is supported by findings that more urban and more food-importing autocracies are more likely to default on their sovereign debt, as economic adjustment in the face of fiscal crisis can threaten regime survival through food riots when it requires removal of cheap food subsidies. Yet the survival incentives of politicians in democratic regimes are likely to be structured differentially to those of autocrats, especially given the institutionalization of executive turnover through elections – rather than fearing removal due to mass protests, incumbents in democracies are more likely to be voted out of office. Thus, political actors in democracies should favor the interests of citizen groups who are electorally important, especially when these leaders' survival in office is tenuous (due, say, to greater fractionalization of the governing party or to slimmer electoral margins).

While the literature on electoral influence is massive, I focus here on a particular strand of work that emphasizes the geographical distribution of electoral influence in various institutional settings. In particular, I note that recent work on the political geography of democracies suggests that many democracies exhibit a rural bias in relative voting weight;[3] if true, we should expect politicians to be especially unwilling to compromise on rural policy when doing so is seen to be threatening to their political survival. In particular, many authors have argued that rural voters enjoy an *electoral mobilizational advantage* due to production agencies that double as political agencies, common economic interests, and greater attention to single-issue voting, all of which result in rural electorates that are more capable of swinging close elections and that are therefore given special treatment disproportionate

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[2]See Bates (1981) or Wallace (2012) for a detailed discussion of urban bias in autocracies.

[3]Varshney (1998) argues that the demographic distribution of voters in rural areas could lead to substantial rural biases in democratic policymaking, and finds evidence for this in India. For a discussion of rural biases in developed democracies, see Rodden (2010), or in developing democracies, especially in Africa, see Stasavage (2005) or Harding (2012).

to their share of the electorate or the economy.[4]

This general intuition is borne out by research on agricultural trade policy, for example, which has found that, in contrast to the clear historical trend towards trade deregulation in industrial and service sectors, agricultural protection remains stubbornly high, and attempts to reduce this subsidization of agriculture have frequently threatened important international trade negotiations.[5] There are few topics that generate more resistance to change in democracies than agricultural protection, which generally includes large producer subsidies, market price fixing, as well as protection from imports. And yet, these costly market interventions by government are not only inefficient and harmful to general consumers, they often also become an immense fiscal burden on the state, and are frequent targets of reform in conditional loan packages by international financial institutions such as the IMF and Word Bank. This combination sets up a difficult dilemma for incumbent democratic rulers facing fiscal crisis: removing costly agricultural subsidies in order to remain current on foreign debt repayment, or instead defaulting on their sovereign debt in order to avoid the electoral consequences of displeasing important rural constituencies.

The remainder of the paper is structured as follows. In the next section, I introduce and formalize my theory linking rural electoral biases in democratic politics to an incumbent executive's decision to default on sovereign debt. I then present empirical evidence consistent with my main claim that more rural democracies are more likely to default on their sovereign debt, an effect which is shown to be robust across a host of estimating models and despite the inclusion of a battery of controls for other competing economic explanations. I subsequently illustrate my mechanism through a detailed historical case of debt default in Turkey, and

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[4]In addition to, in some cases, explicit institutional over-weighting of rural votes vis-a-vis urban ones – Mulgan (1997) finds, for example, that at one point Japanese rural voters for Japan's Upper House enjoyed a relative voting weight that was nearly seven times greater than urban voters!

[5]It is commonly held that the inability to resolve the current WTO Doha round of negotiations, despite work on the topic now for over a decade, is largely due to the unwillingness of major economies to budge on their agricultural policies – this is due directly to the electoral importance of agricultural interests. See Davis (2003) for discussion.

finally conclude with a discussion of the implications of my results and directions for future research.

2 Rural bias, agricultural support, and democratic debt default

In contrast to many models of sovereign debt default that conceive of government as a welfare-maximizing agent, my theory begins with the assumption that political incumbents are self-interested actors that desire, above all else, to remain in power. In democracies, of course, staying in power generally equates to winning elections, and as such, politicians will cater their policy choices to groups in society that have more electoral sway. Yet, assuming each individual is given a single vote, what does it mean for different actors to exert unequal electoral influence?

At a basic level, it is intuitive to think that democratic elections should privilege larger groups in society – there exists a simple mathematical advantage to larger groups, all else equal, as they contribute more overall ballots than smaller groups do. In this regard, a limited literature on the geographical distribution of political power across regime types has identified that many developing democracies should exhibit a *rural bias* in their policymaking: that is, in many new democracies where a substantial majority of the population lives in rural areas, it should not be surprising to find that rural voters are more likely to be favored by politicians seeking to curry favor among a large swath of the electorate (Stasavage 2005). Early work by Varshney (1998), for example, found evidence for substantial rural bias in Indian politics, especially following the rise of Charan Singh and his movement to empower farmers. The tendency for Indian politicians to favor agricultural producers, especially during close elections, has been reconfirmed by Golden and Min (2012)'s findings on abuse of electricity provision by rural actors in the Indian state of Uttar Pradesh, who use nearly

17% of all electoral supply but pay for less than 5% of it.

The ability of rural groups to acquire political influence in democratic politics is of particular interest when contrasted against standard accounts of *urban bias* in non-democracies, where the collective action disadvantages for mass protest in rural areas make survival-minded regimes less likely to consider their economic interests, especially as relates to agricultural policy.[6] Indeed, recent work on urban-rural politics by Bates and Block (2011, 322) finds that, while larger rural population shares are associated with greater anti-agricultural discrimination in autocracies, "electoral competition transforms high values of rural population share from a political liability into a political asset...the institution of competitive elections has transformed rural producers in Africa from a disadvantaged lobby into a potent electoral influence."

Yet do individuals really express preferences as urban or rural actors? Survey work by Harding (2012) has found that support for incumbent parties across democracies in Africa is consistently lower among urban than rural voters, an effect that persists even after ruling parties change hands. Arguing that this is due to sitting incumbents that favor rural groups for electoral gain, Harding notes that the size of urban "anti-incumbency bias" declines as the electorate becomes more urbanized (and the electoral incentives for rural pandering decline). Yet, even in the most urbanized country in his sample,[7] Harding finds that urban voters are still less likely to support incumbent parties than are rural voters, suggesting that while increasing the size of the urban electorate helps to decrease rural favoritism overall, there may still exist some deeper institutional bias towards rural groups in developing democracies.

Beyond simple advantages of group size, rural actors may also be rewarded in democratic

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[6]Bates (1981); Wallace (2012); Ballard-Rosa (2014)

[7]South Africa had 60% urban population in 2005. Note that, by simple median voter models, having greater than 50% urbanization would imply that democratic politicians should pander predominantly to urban voters, and yet this does not seem to arise in Harding's findings on urban anti-incumbent bias. This suggests that there must still be some facet of rural voters, even when they are no longer in the majority, that makes them electorally critical targets of government largess.

politics because of their "swingness" – the capacity of rural groups to mobilize large blocs of votes over a single issue can make rural voters a critical component of successful electoral calculus by competing parties. Within the formal literature on electoral swingness,[8] two of the standard references both explicitly highlight rural agricultural voters as examples of voting groups that tend to be favored due to their ability to swing close elections. Dixit and Londregan (1996, p1134) motivate their discussion of disproportionate electoral influence by noting that, "[i]n this setting, largesse for some minority interest groups enjoys bipartisan support—both parties compete for the title of *'farmers' best friend.'*" Persson and Tabellini (2000, p159)'s introduction to a chapter on special interest politics argues that a "classical example of this systematic bias is agricultural policy. Virtually all democracies provide generous support for their farmers through trade policies, direct subsidies, and various other programs." Additionally, empirical and historical work on agricultural trade policy in democracies more generally has consistently argued for the "special place" of rural voters, and it is often argued that this arises from a disproportionate ability to mobilize rural voters over agricultural policies.[9]

This mobilizational advantage in rural areas derives from at least three related factors. First, agricultural producers are generally more similar to one another, all else equal, than are equivalent urban groups. In countries with large agricultural workforces, a sizable proportion of the population may be engaged in the production of only a handful of key food products, and may therefore be affected by government price policies on a very small number of goods. Contrast this with the diversification of urban economies, where different factories may produce widely differentiated products, greatly fragmenting the ability of the government to secure large groups of urban voters with a few simple price policies.[10]

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[8]Models that account for electoral swingness are usually referred to as "probabilistic voting models" in the formal literature.

[9]See, for example, Davis (2003).

[10]In more developed economies, the shrinking size of the agricultural sector vis-a-vis the urban economy is also often argued to lead to an Olsonian advantage in lobbying by farming interests, in which the distortionary

Additionally, due to infrastructural difficulties of marketing rural production, a common component of rural communities is the presence of an agricultural marketing board responsible for securing goods grown in rural areas and transporting them to urban markets. While these boards were the source of abuse in many autocracies intent on squeezing agricultural producers in order to provide food cheaply to urban consumers, in democracies these marketing agencies have instead often become the locus of electoral political activity. That is, these production agencies bind together the electoral and economic interests of rural farmers quite explicitly – in Japan, for example, Mulgan (1997, p885) notes that "at the local level, each farming community has formed the core of agricultural cooperative membership, with strong bonds of community interest reinforced by loyalty to a common group. These organizational factors have meant that the Nokyo [farmer cooperative] vote has been relatively cohesive and thus able to be moved in blocs by agricultural cooperative leaders." What has been the electoral effect of such arrangements? Mulgan (1997, p888) continues by arguing that, "[i]ndeed, Nokyo has been described as the LDP's biggest vote-gathering machine. This has bestowed the advantage of alignment with a party that has ruled continuously since 1955." Nor is this type of organization unique to Japan. For example, following independence in Kenya there developed strong local rural political groups (*harambee*) that served as effective conduits of rural votes in exchange for government transfers; it is not surprising that Kenya was a country in which farmers enjoyed some of the highest producer prices in Africa.[11]

Finally, as noted by Harding (2012), it may also be the case that traditional social structures promote the ability of local rural leaders to guarantee the votes of hundreds (if not thousands) of their "subordinates," which would again increase the swingness of rural interests by allowing local leaders to deliver large blocs of votes to the highest bidder. Early

costs of agricultural protection are spread across a wide consumer base, while greatly concentrated benefits accrue to a small group of agribusinesses. See Anderson et al. (1986); Honma and Hayami (1986) for discussion.

[11]Widner (1994) provides a discussion of the development of *harambee* in Kenya.

democratic competition in post-independence India, for example, seems to have followed this logic: Frankel (1978, p386) notes that, at least until the 1969 elections, "[a]t the district level, political mobilization occurred in a vertical pattern: leaders of the elite landed communities constructed multicaste political factions with support from families of low-status dependent groups to create 'an organization based upon the ties between a leader and his followers, an economic patron and his dependents.'" While the target of government transfers in this more hierarchical world need not necessarily be (primarily) the poor peasant, the ability of landlords to deliver critical votes in exchange for elevated agricultural producer prices further strengthens the theoretical linkage between rural swingness, agricultural subsidies, and democratic electoral survival.[12] Thus, insofar as democracies exhibit a rural electoral bias due to swingness of rural voters, I expect sitting incumbents to be particularly averse to removing agricultural subsidies in the face of fiscal crisis, even when not doing so may necessitate sovereign debt default.

2.1 The Model

2.1.1 Citizens

Consider a world of four actors: two groups of citizens (U and R), an incumbent government (I), and a political challenger (C). Rural citizens R form a fraction $(1-\alpha)$ of the population, and are engaged in production of an agricultural good b, with each rural actor producing $\bar{b}$ units of "bread." Urban citizens U compose the remaining α fraction of the population,[13] and are engaged in producing $\bar{x}$ units of some other, non-agricultural good x. Utility for an

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[12]Golden and Min (2012) argues that the ability of local agricultural producers to deliver rural votes en masse to political parties is one of the dominant explanations for their findings on rural bias in distortions to electricity provision policy in Uttar Pradesh.

[13]I consider the ruling government, as well as the challenger, to be of measure zero.

individual citizen i of type $j \in \{R, U\}$ over "food" and "other consumption" is given by:

$$v_{ij}(x, b) = x + ln(b) \qquad (1)$$

In addition to this consumption utility, citizens also possess individualized preferences for which party is in power, such that an individual's complete utility function is

$$u_{ij}(x, b) = v_{ij}(x, b) + 1\{G = I\}(\sigma_{ij} + \epsilon) \qquad (2)$$

where $1\{G = I\}$ is an indicator function that equals one while the incumbent party I is in office and zero if the challenger C assumes power. Thus, σ_{ij} captures the *pro-incumbent party bias* of an individual. This partisan bias can take any number of forms in the real world, but is commonly thought of as individual preferences over some non-economic ideological position of parties which is not subject to electoral manipulation in the short term.[14] In addition, ϵ represents a general pro-incumbent valence shock (shared by all individuals), such as may result from unexpected political scandals or other sources of swings in public sentiment unrelated to policy. While citizen utility and the distribution of pro-incumbent biases are common knowledge for both political parties, the exact value of σ_{ij} for any given individual and the realization of ϵ are unknown to the parties at the time they are selecting policy proposals, and so parties will form expectations over these distributions in the population at large when making policy decisions. For ease of analysis, and following the workhorse model of probabilistic voting in Persson and Tabellini (2000), I assume that σ_{ij} and ϵ are distributed uniformly and are mean-zero, but allow the density of the distribution of individual pro-incumbency bias to vary by citizen type; formally, I assume $\epsilon \sim U[-\frac{1}{2\eta}, \frac{1}{2\eta}]$ and $\sigma_{ij} \sim U[-\frac{1}{2\psi_j}, \frac{1}{2\psi_j}]$ for $j \in \{R, U\}$.

The economy is integrated into international markets, such that the market clearing price

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[14]See, for example, Lindbeck and Weibull (1987); Dixit and Londregan (1996).

must be the world price in equilibrium; without loss of generality, I normalize the price of x to unity. However, I also assume that the government may set policy to affect the domestic producer price received by agricultural producers (such as by offering guaranteed floor prices or producer price subsidies); this means that the domestic price paid for b is given by the world price π plus any government subsidy $\phi \in [\underline{\phi}, \bar{\phi}]$, where $\underline{\phi} < 0$, so that $p = \pi + \phi$.[15] Note that, when ϕ takes values less than zero, this reduces the domestic price below that of the world price, and is equivalent to a consumer price subsidy. Given this set up, income for an individual urban citizen is simply $\bar{x}$, and rural individual income is $(\pi + \phi)\bar{b}$. In what follows, for ease of presentation I assume that $\bar{x} \geq 1$ always.[16]

2.1.2 Political actors

I assume that political actors value executive office both for "personal" reasons χ, which may include psychological or economic motives, as well as for access to government fiscal resources, whether for altruistic or selfish purposes. The literature on responses to fiscal crises in developing countries has often emphasized the difficulty for these countries to respond to pressing budgetary imbalances by raising revenue, often due to poor government infrastructure or to bureaucratic corruption. In what follows, I therefore abstract away from questions over increasing government revenue through taxation and instead focus on the benefits of expected future loans l, which are discounted to their present value by ρ. However, these loans will be provided only so long as the country remains constant on its existing debt payments d, which (if made) must be deducted from current government revenues γ. Any expenses on producer price subsidies $C(\phi)$ must be deducted from these revenues as well,

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[15]It is quite natural to think that the subsidy level a government may select is bounded at both the upper and the lower end. At the lower end, given available government resources, there will exist a limit on the amount of food that a government can import at a higher world price and then sell at a lower domestic price. At the high end, an effective upper bound on the domestic price of food is formed by the fiscal cost of acquiring excess production at this high price that must be offloaded at a loss on world markets.

[16]As detailed in the Appendix, comparative statics of the model are qualitatively the same when $\bar{x} < 1$, so I suppress this case in what follows to facilitate ease of explication.

and thus, given a binary default decision $\delta \in \{0, 1\}$, government faces the following *budget constraint*:

$$\gamma \geq C(\phi) + (1 - \delta)d \tag{3}$$

In essence, the government's default decision allows it to free up resources previously dedicated to debt servicing to instead employ in subsidizing producers or consumers.[17] Given this set up, the governing party's utility is given by

$$u_G(\delta) = \chi + (1 - \delta)\rho l \tag{4}$$

There also exists a political challenger, C, which may be thought of as an opposition party or candidate. I assume that this challenger's payoff for winning control of the executive is identical to that of the incumbent, while each receives an outside payoff of zero when not in power. There is an upcoming election of sufficient temporal proximity that the current actions of the incumbent will be used for electoral evaluation by voters, and will be compared against whatever policy the challenger proposes. That is, when choosing a candidate to vote for, citizens compare their payoff under the chosen policy of the incumbent against their expected payoff under the policy proposed by the challenger.

I pause to note an asymmetry of citizen preferences over policy choices – namely, citizens do not take into account the long-run costs of default in terms of loss of access to future loans,

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[17]In reality, the default decision of a government facing fiscal crisis often takes a slightly more complex form: in order to stay current on debt payments, the government usually must rely on conditional loans from the major international financial institutions, primarily the IMF (especially since obtaining loans from other entities during crisis is often contingent upon a country first signing a letter of agreement with the IMF). However, the IMF typically makes several demands on countries facing fiscal crisis intended to help remedy either current account or fiscal imbalances – removing government subsidy programs are usually high on the list of changes the IMF requires. Yet many democratic governments fear removing subsidies for favored rural constituents will lead to threats to their survival in office, and thus are unwilling to make these changes, which can move them into violation of the terms of their IMF conditional loans and, thus, default. The game presented here abstracts away from this extra institutional step, as the end result and comparative statics are comparable. In future work, I would like to model institutional interactions with IFIs more directly. For discussion of the politics of IMF conditionality, see Stone (2004, 2008); Vreeland (2006).

and thus their economic interests are formed entirely over the food price subsidy ϕ. That said, citizens may have indirect preferences over whether the government defaults or not, especially if so doing frees up more short-term resources to be spent in a preferred subsidy scheme. This lack of citizen consideration of the long-term consequences of default may be defended on a number of grounds, including the belief that voters are more interested in their short-term well being and will tend to disregard future economic consequences of policies that are beneficial to them in the present.[18] Of course, in reality it may indeed be the case that certain individuals have preferences over whether a country remains constant on its debt servicing payments;[19] however, it is not necessarily clear how these preferences might break along urban-rural lines, and so in what follows I abstract away from such concerns, focusing instead on proximate citizen economic preferences.

2.1.3 Cost of subsidy program

Before moving to solve the game, I make explicit the costliness to the government of a given subsidy program. I begin by defining this cost as the (procurement cost - profits from domestic sales - profits from international sales); that is, under the assumption that government purchases the entire stock of domestically produced food at the secured price of $p = \pi + \phi$,[20] the final cost of this program will be reduced by any profits the government makes from selling back this food on the domestic market at price p as well as any excess production sold on the world market at the international price π. Letting Δ_b stand for domestic demand of food,[21] the cost of a given producer subsidy policy is given by

$$C(\phi) = \phi((1-\alpha)\bar{b} - \Delta_b) \tag{5}$$

[18]Consider, for example, the apparent lack of strong voter concern in the American political system over responses to clearly looming fiscal crises created by social welfare spending on Medicare or Social Security.

[19]See, for example, Tomz (2004).

[20]Observe that, given a guaranteed above-world-market price of p, no rational producer would sell his goods elsewhere.

[21]I derive this demand function explicitly in the Appendix.

which is simply the per-unit loss on any crops which are not absorbed by the domestic market. Careful consideration of this cost function reveals that the fiscal burden of government interference in the agricultural market depends critically both on the sign of the subsidy (whether the government pushes domestic prices above or below the world price) and on the trade status of the country in question (whether the country is a net importer or exporter of food). Interaction of these two factors reveals four possible cost regimes that are treated in detail in the Appendix; however, one clear outcome of this consideration is that the fiscal costs of setting positive agricultural price supports should be felt most dearly in net food exporting countries. The intuition behind this is straightforward – if a government is able to re-sell all of the domestically-produced food it purchased from farmers to domestic consumers at the same price, this results in a transfer of resources between citizens but does not generate any fiscal burden for the state. However, if the government is unable to re-sell to domestic consumers all of the agricultural produce it has purchased, it must sell the remainder at a loss on the international market at the (lower) world price.[22] This will become more costly both as the size of the price distortion increases and as the surplus of domestic agricultural produce grows.

This highlights an important testable implication of the model: the government will incur a cost to a positive subsidy program only when it must sell some amount of domestic food production on the world market. Thus, pressure to default should result from rural electoral influence only (or especially) in countries that are *exporters of food.* This unexpected result is even more counterintuitive when considered against the backdrop of more standard accounts of debt default in developing countries, which tend to argue that agricultural exporters were usually better insured against default because of their ability to secure large amounts of foreign exchange.[23]

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[22]Alternately, if the government is unwilling to sell its excess procurement at a lower world price, this may lead to even larger fiscal costs if food exports are uncompetitive on world markets (due to higher prices) and therefore sit rotting in government storage facilities. See the case of Turkey below for an example of this.

[23]A symmetric logic applies to consumer price subsidies in net food importing countries: the fiscal con-

2.1.4 Timing

I now make explicit the timing of the game:

1. Nature draws a world price of food $\pi \sim F(.)$.

2. The Incumbent and Challenger simultaneously choose whether to default or not, and select a feasible producer price subsidy ($\delta_k \in \{0,1\}$, $\phi_k \in [\underline{\phi}, \bar{\phi}]$ for $k \in \{I, C\}$).

3. Nature draws values for ϵ and for all σ_{ij}.

4. Citizens vote either for the Incumbent or the Challenger based on $u_{ij}(\phi_I)$ versus $u_{ij}(\phi_C)$.

5. The winning party assumes (or retains) control of the executive, and payoffs accrue.

2.2 Solution

I solve for subgame perfect Nash equilibria via backwards induction. Letting y_j represent income for a citizen of type $j \in \{R, U\}$, a citizen's indirect consumption equilibrium utility, conditional on own income, is

$$w_{ij}^*(\phi) = \begin{cases} y_j - 1 - ln(\pi + \phi) & \text{if } y_j \geq 1 \\ ln(y_j) - ln(\pi + \phi) & \text{otherwise} \end{cases} \tag{6}$$

It can be shown that $\partial w_{iU}/\partial \phi < 0$ always; that is, urban citizens are always made worse off by an increase in agricultural producer prices, as this simply translates into higher prices for the food they wish to buy. Thus, an urban consumer's ideal subsidy is the minimum feasible subsidy, or $\phi_U^* = \underline{\phi}$. Additionally, so long as $(\pi + \phi)\bar{b} \geq 1$, then $\partial w_{iR}/\partial \phi > 0$; that is, rural

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sequences of setting below-market food prices should be most severe in those countries that import a large share of their food, and suggest that pressures to default may be greater in urban-biased food importers. See Ballard-Rosa (2014) for a detailed discussion of this in non-democracies.

producers are made better off by an increase in the price of products that they produce so long as they have some surplus food which they do not consume themselves.[24] As such, a rural voter's ideal subsidy is the maximum feasible subsidy, or $\phi_R^* = \bar{\phi}$. Observe as well that, as future loans made to the government do not enter into utility calculations for ordinary citizens, citizens may indirectly have a preference for government debt default when doing so frees up additional short-term resources to be spent on valuable subsidies.

2.2.1 Party vote share

While preferences over agricultural subsidies are straightforward, given an individual's type, knowing the subsidy levels chosen by each party does not completely identify voting behavior, as individuals are also driven by their inherent preferences for one party over another. Given policy choices by the Incumbent and Challenger of ϕ_I and ϕ_C, an individual i of type j will vote for the Challenger whenever $w_{ij}(\phi_I) + \sigma_{ij} + \epsilon \leq w_{ij}(\phi_C)$. For each citizen group, I define the "critical" voter in that group as the individual who is exactly indifferent between the two party platforms, which means that her incument-party bias $\hat{\sigma}_j$ is such that

$$\hat{\sigma}_j = w_{ij}(\phi_C) - w_{ij}(\phi_I) - \epsilon \tag{7}$$

That is, all individuals of group j with $\sigma_{ij} < \hat{\sigma}_j$ will vote for C, while the remainder will vote for I. Given this individual voting rule, the total vote share won by the Challenger is

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[24]Note that when $(\pi + \phi)\bar{b} < 1$, rural producers cannot afford to spend one dollar on food, and so instead will spend their entire income purchasing food. Since the producer selling and consumer purchasing prices are the same in the domestic market, an equivalent interpretation is that subsistence farmers will not care about crop subsidies until the point at which it becomes profitable to market surplus food. However, while there is a discontinuity in rural preferences over ϕ, as long as there does exist some subsidy level $\tilde{\phi}$ such that $(\pi + \tilde{\phi})\bar{b} \geq 1$, rural voters will still always prefer $\tilde{\phi}$ to any $\phi' < \tilde{\phi}$. For ease of exposition, I assume below that this condition always holds – work on agricultural economics has generally agreed that farmers are, in fact, quite price sensitive, and so it seems reasonable to assume there does exist some subsidy large enough to entice rural producers into marketing at least some share of their crops.

given by

$$V_C = \alpha F_U(\hat{\sigma}_U) + (1 - \alpha)F_R(\hat{\sigma}_R) \tag{8}$$

where $F_j(.)$ is the distribution of pro-incumbent party biases in each citizen subgroup. Replacing these distributions with their known functional form and substituting in for each critical citizen's payoff gives the following closed form solution to the vote share won by the Challenger party:[25]

$$V_C(\phi_C|\phi_I) = \alpha\psi_U[ln(\frac{\pi + \phi_I}{\pi + \phi_C}) - \epsilon] + (1 - \alpha)\psi_R[(\phi_C - \phi_I)\bar{b} + ln(\frac{\pi + \phi_I}{\pi + \phi_C}) - \epsilon] + \frac{1}{2} \tag{9}$$

Finally, assuming majority rule, the probability of victory for the Challenger is simply the probability that $V_C(.) > 0.5$. Given distributional assumptions on ϵ, and defining $\psi = \alpha\psi_U + (1 - \alpha)\psi_R$ as the average density of individual pro-incumbent biases across groups, the probability that C wins the election is

$$\nu_C(\phi_C|\phi_I) = \frac{\eta}{\psi}(\alpha\psi_U ln(\frac{\pi + \phi_I}{\pi + \phi_C}) + (1 - \alpha)\psi_R[(\phi_C - \phi_I)\bar{b} + ln(\frac{\pi + \phi_I}{\pi + \phi_C}]) + \frac{1}{2} \tag{10}$$

In equilibrium, each party will select its own subsidy proposal so as to maximize its expected probability of victory, taking its opponent's policy choice as given. Interpretation of $\nu_C(.)$ is therefore reduced to seeing how the function changes with changes to ϕ_C, and is straightforward to interpret. The left-hand term inside the parentheses represents votes won from urban voters; clearly, having ϕ_C in the denominator of this term shows that an increase in the agricultural subsidy will result in a reduction in urban votes, as should be expected. In addition, this reduction is proportional both to the overall size of the urban population α as well as to the density of the distribution of urban "ideological" preferences for the incumbent party ψ_U.

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[25]Of course, the vote share won by the Incumbent is equivalently given by $V_I(.) = 1 - V_C(.)$.

The right-hand term represents votes won from rural voters, with increases in ϕ_C resulting both in an increase to rural income as well as a decrease in rural food consumption. However, the utility gain from increased income always outweighs any decline from decreased food consumption,[26] and so we again find that rural votes will increase as ϕ_C becomes larger. Additionally, this increase in rural vote share is proportional both to the rural share of the population $(1 - \alpha)$ as well as the density of rural "ideological" preferences for the incumbent party ψ_R.

As urban vote share declines while rural vote share increases with an increase in agricultural subsidies, clearly the Challenger will raise its proposed subsidy only when doing so actually increases its overall probability of victory. This is equivalent to cases where $\partial \nu_C / \partial \phi_C \geq 0$, which occurs whenever

$$\phi_C \geq \hat{\phi} \equiv \frac{1}{\bar{b}}(1 - \pi \bar{b} + \frac{\alpha \psi_U}{(1 - \alpha)\psi_R}) \tag{11}$$

Thus, $\hat{\phi}$ gives the inflection point in the probability of victory curve – when $\phi < \hat{\phi}$, any increase in ϕ actually reduces a party's probability of victory. On the other hand, when $\phi > \hat{\phi}$, the likelihood of winning office goes up as a party sets a higher agricultural price subsidy. As should be expected, this inflection point will occur at lower values as the size of the rural population increases, and as rural ideological density increases; the opposite holds true for increasing urban population and urban ideological density.

Note that, as $\partial^2 \nu_C / \partial \phi_C^2 > 0$, $\nu_C(.)$ is convex in ϕ_C, and so equilibrium policy choices will exist at the boundary conditions on ϕ. In addition, under the assumption that parties are only office-motivated, equilibrium behavior by the Incumbent party will be symmetric to the behavior of the Challenger party discussed above, implying that both will always propose

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[26]Strictly speaking, under the assumption above that there always exists some subsidy large enough to entice rural producers into marketing their goods, in equilibrium no party seeking rural votes would propose a subsidy less than this amount, and rural utility is always increasing in ϕ whenever this holds true.

the same subsidy in equilibrium. To get a sense for these dynamics, consider Figure 2 below, which graphs the probability that the Challenger wins the election for various subsidy levels when the Incumbent is currently proposing no subsidy (that is, when $\phi_I = 0$).

[Figure 2 about here]

To construct the graphs pictured in Figure 2, I have assigned particular values to several of the primitives of the model;[27] most importantly, I have assumed here that the world price $\pi = 1$. This assumption allows a straightforward interpretation of changes in ϕ on the unit scale as proportional increases or decreases in the world price; that is, choosing $\phi = 0.5$ represents an increase in the domestic price over the world price by 50%, whereas $\phi = -0.25$ reduces the domestic price below the world price by 25%. Figure 2 provides two different probability of victory functions, with all values held constant save the degree of rural or urban electoral influence. The blue graph presents the probability of victory (over changes in ϕ) in an "urban-biased" system,[28] while the red line presents the same function in a "rural-biased" system.[29]

Consideration of the two graphs reveals a few key insights. First of all, regardless of the bias, if the Challenger selects the same subsidy as her opponent ($\phi_C = 0$), both parties will split the vote exactly, as should be expected. In the rural-biased system, the inflection point $\hat{\phi}$ where increases in ϕ lead to an increase in probability of victory occurs at a much lower level than it does in the urban-biased case. Yet, as probability of victory continues to rise for any increase in $\phi > \hat{\phi}$, or for any decrease in $\phi < \hat{\phi}$, it is clear that the optimal electoral strategy for both parties is to consider their probability of victory at either of the corner solutions that occur at $\phi = \bar{\phi}$ when favoring rural producers and $\phi = \underline{\phi}$ when favoring urban

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[27]Specifically, the graph is constructed assuming $\bar{b} = 4$, $\eta/\psi = 0.2$, and $\phi_I = 0$. These values were chosen arbitrarily, and the discussion below would not change for other assumed values so long as they obeyed the assumption that rural voters still cared about price policy (that is, that $(\pi + \phi)\bar{b} \geq 1$).

[28]Where $\alpha\psi_U = 0.8$ and $(1 - \alpha)\psi_R = 0.2$.

[29]Where $\alpha\psi_U = 0.2$ and $(1 - \alpha)\psi_R = 0.8$

consumers. Thus, the location of these bounds on ϕ are of critical importance in determining whether politicians have an incentive to deviate to another policy.

2.2.2 Incentive compatibility constraint

As both parties are equally office-motivated, they should always propose the same policy in equilibrium which maximizes the probability of winning the election. There are four potential feasible subsidy levels that may prove optimal: the maximum or minimum feasible subsidy under "austerity,"[30] as well as the maximum and minimum feasible subsidy under default.[31] While politicians can always increase their rural vote share by increasing the maximum producer subsidy, or their urban vote share by increasing the consumer subsidy, the option of defaulting may still not prove ideal as doing so reduces the future value of holding office.

Given the emphasis in the literature above on rural biases in democracies, and in order to economize on space, I focus here on the conditions that must hold for *rural-biased austerity* equilibria, noting that discussion of urban-biased equilibria are essentially symmetric. As such, I assume that when both parties cannot agree on an identical austerity policy, default will be the end result. There are, in essence, three main conditions which must hold in any rural-biased austerity equilibrium: there must be an electoral incentive for favoring rural voters; the country must either be a net food importer; or, if not, the loss in future expected revenues from defaulting must be large enough to offset the increased likelihood of winning office that would ensue from higher producer support prices that debt default enables. I now consider each of these conditions in turn.

A rural-biased austerity equilibrium is characterized by both political parties choosing to set the maximum feasible agricultural price support when the government remains constant

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[30]That is, $\bar{\phi}$ or $\underline{\phi}$ when the government has remained faithful on debt repayment and so total government resources are $\gamma - \bar{d}$.

[31]$\bar{\phi}$ or $\underline{\phi}$ when the government has defaulted on its debt and so total available government resources are γ.

on its debt payments. This maximum feasible subsidy can be calculated as the value $\bar{\phi}_A$ such that $\gamma - d = C(\bar{\phi}_A)$, where the A subscript here refers to "austerity." In order for parties to favor setting this rural-biased policy in equilibrium, it must be the case that if either party deviated to the (urban-favored) maximum feasible consumer price subsidy $\underline{\phi}_A$, it would not enjoy an increase in its probability of winning office. Formally, this requires that $\nu_C(\bar{\phi}_A|\phi_I) \geq \nu_C(\phi_C|\phi_I) \, \forall \, \phi_C, \phi_I \in [\underline{\phi}_A, \bar{\phi}_A]$. Thus, there must exist an *electoral advantage* to favoring rural versus urban voters.

If parties do choose to favor rural voters by setting higher agricultural support prices, it is also important to consider the *food trade* status of the country. As mentioned above (and discussed in greater detail in the Appendix), setting above-market food prices should create a fiscal burden for government only when it is unable to re-sell the entirety of farmer's produce on the domestic market – that is, the costliness of agricultural intervention should increase primarily only for those democracies that are net food exporters. Indeed, if some countries require imports of food at a lower world price in order to satisfy domestic demand, but these imports can be sold at the higher domestic price, this may represent a fiscal boon for the state. As sovereign default in this model is primarily valued by politicians hoping to set a higher feasible subsidy in order to win an election, I expect that this effect should hold especially in those food exporting countries where the fiscal burden of higher agricultural support prices is greater. As defaulting strictly reduces the future value of holding office, if it does not provide an electoral advantage in food importing countries by making higher subsidies more feasible, then rural-biased austerity equilbria should be more likely to arise, all else equal, in net food importing democracies.

Finally, in those countries default does actually increase the maximum feasible subsidy, in order for both parties to still favor austerity, it must be the case that the loss of future revenues from defaulting outweighs the increased probability of winning office that results from setting a higher producer support price $\bar{\phi}_D$. In other words, parties must prefer to split

the likelihood of winning office by both setting the maximum feasible austerity subsidy $\bar{\phi}_A$ as opposed to defaulting and increasing their odds of winning an office that provides fewer future resources. Formally, this occurs whenever

$$\frac{\chi + \rho l}{2} > \nu_C(\bar{\phi}_D)\chi \tag{12}$$

which, after substitution and rearrangement of terms, gives

$$\rho l > \chi\frac{2\eta}{\psi}(\alpha\psi_U ln(\frac{\pi + \bar{\phi}_A}{\pi + \phi_D}) + (1 - \alpha)\psi_R[(\phi_D - \bar{\phi}_A)\bar{b} + ln(\frac{\pi + \bar{\phi}_A}{\pi + \phi_D})]) \tag{13}$$

Thus, when Equation 13 holds true, parties will favor the rural-biased austerity equilbrium; on the other hand, factors which make this condition less likely to hold true should be those that increase the appeal of debt default.

2.3 Comparative statics

Consideration of Equation 13 reveals several key factors that affect the appeal of pursuing austerity as opposed to sovereign debt default in rural-biased democracies. Of greatest theoretical interest for this paper is the effect of rural electoral influence. First of all, the greater the "swingness" of rural voters vis-a-vis urban voters ($\psi_R > \psi_U$), the greater the electoral gains to be had from pandering to agricultural producers. The parameter characterizing the density of the distribution of ideological preferences of different groups ψ_j gives the (marginal) density of voters of a given group that will be swayed by a shift in a given economic policy – if rural agents are often capable of delivering blocs of votes to politicians in exchange for agricultural support, then there may be good reason to expect that this density is higher for rural than for urban voters, suggesting that ruralized democracies should be less willing to engage in politically suicidal economic reforms. While operationalizing the concept

of voter "swinginess" is difficult, I provide below one test of this claim by investigating the effect of rural electoral size in countries with highly fractionalized governments, such that any incremental increase in vote share could prove electorally important.

In addition, noting that the maximum feasible price supports under default or austerity are determined endogenously in the model and are affected by the rural population share, the probability that a party wins office when proposing $\bar{\phi}_D$ is also a function of the size of the rural electorate $(1 - \alpha)$. However, an increase in the share of the population that is rural may impact voting outcomes on two separate dimensions. On the one hand, an increase in the number of rural citizens has a direct effect on the overall composition of the electorate, such that there are greater numbers of voters to be gained by pandering to rural interests. On the other hand, given that the maximum feasible subsidy is set at the point where the budget binds, any increase in the number of agricultural producers results in a decrease of the per-capita transfer that can be afforded for a set level of government resources. An increase in the rural population share therefore has two effects on the probability of winning an election, an *electoral composition* effect and a *per capita transfer size* effect. Determining the conditions when the former will outweigh the latter is non-trivial;[32] however, a simple thought experiment provides an intuitive criterion for suggesting when one should be more likely than the other.

Consider first a country with a single rural citizen. If we add another rural citizen, the feasible per capita transfer will have, in essence, been halved (since previously a single individual enjoyed the entire transfer, which is now split between two voters). In this case, it seems likely that the dramatically reduced increase in per capita rural welfare from a higher subsidy would outweigh the electoral value of a single vote. Consider now a country (identical in all other respects) with one million rural citizens – assuming that the total population size is identical in both countries, the effect on the electorate should be the same for adding

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[32]Solution in the Appendix.

one additional rural voter, yet the per capita welfare effect should be much smaller, as the difference between splitting the transfer between a million producers versus a million and one producers is likely to be minuscule. This provides a rather intuitive way to evaluate whether to expect the electoral composition or the per capita transfer size effect to dominate: namely, increasing the size of the rural population should have a much greater likelihood of increasing default in countries with already large rural populations. This suggests my first and primary comparative static to be tested empirically below – more rural democracies should be more likely to default on their debt. Yet attention to nuance of the argument provides another testable implication which I explore while probing the robustness of my primary result. As this effect should be most pronounced conditional on larger rural population size, I further disaggregate my results by looking at countries that are above or below average in terms of their rural population shares.

As discussed above, when a country is a net food exporter, the costliness of raising the food subsidy increases as the subsidy gets larger. In these cases, the difference between the maximum feasible austerity subsidy and the maximum feasible subsidy under default is increasing in the size of the government's debt (larger d), and so the expected electoral gains from default should be greater in countries with more debt to repay. However, recall that in cases where the government is a net food importer, increases in the subsidy need not incur additional fiscal costs – clearly, if there is no additional electoral gain from moving to default (and providing a larger subsidy) in these cases, while there is a direct reduction in the value to holding office for politicians for doing so, default should be unlikely in such regimes.[33] As such, I provide additional tests of my main hypotheses by disaggregating my sample into countries that are net food importers and exporters. This expectation is particularly surprising when one considers that much previous work on sovereign default

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[33]That is, default due to the fiscal costs of agricultural intervention. Of course, there are a number of other reasons why a country may need to consider default outside of the specific logic I develop here.

has tended to argue that, especially in developing countries, the presence of agricultural exports was actually a critical source of foreign exchange revenue – under this economic logic, we should expect default to be more likely in countries that are non-exporters of food, especially if increased reliance on food imports places a severe strain on otherwise scarce foreign currency that may be needed to repay international lenders.

Finally, the left-hand side of Equation 13 reveals the rather intuitive finding that politicians who expect greater resources from financial markets in the future (larger l) should be less likely to favor defaulting on their debt, as should politicians who place lesser relative emphasis on being in office per se (smaller χ). However, politicians with shorter time horizons (smaller ρ) may be more likely to consider default if it increases the likelihood of short-term survival; existing work on political business cycles, for example, argues that this may be particularly likely when parties are unsure of remaining in office given an impending competitive election. While politician-level measures on the value of holding office and expectations over future loan sizes are difficult to operationalize, I provide below several tests of the effect of politician time horizons on the likelihood of debt default by looking at proximity to impending elections and at the margin of electoral victory in a given election.

Before moving to the empirical section of the paper, I pause to admit giving short shrift to discussion and analysis of urban-biased democracies. Indeed, while more detailed consideration of urban-biased default would not change the model's predictions about the value of holding office and expected future loans, my predictions regarding voting population shares and net food trade status would be reversed. That is, if democracies are not rural-biased, as has been emphasized in the literature, but instead tend to face urban-biased electoral incentives, I should expect to find exactly the opposite relationship between rural population share, food trade, and democratic debt default. Having acknowledged that this result does emerge from the model, we are left with two equally valid theoretical claims – resolving this debate requires investigation of the actual empirical relationship between these factors and

sovereign debt default in democracies, to which I turn below.

3   Empirical support

3.1   Data & estimation

Having developed a theory linking rural population shares to sovereign debt default in democracies, I now test my main hypotheses using time-series panel data covering 55 democratic countries from 1970-2009. My outcome of interest comes from the historical dataset on economic crises presented in Reinhart and Rogoff (2009); in particular, for my main dependent variable I use the measure of years a country spends in default to its external creditors. As explained in their work, a "sovereign default is defined as the failure of a government to meet a principal or interest payment on the due date (or within the specified grace period). These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation" (11).[34] Due to lack of earlier availability of other important covariates, I make use of default data beginning in 1970 and continuing up until 2009. Of the 70 countries covered by Reinhart and Rogoff's dataset, given my theoretical interest in explaining democratic default, I restrict the sample to only those country-years which are classified as democratic, reducing the sample to 55 countries.[35] For analysis of sovereign debt default in the autocratic subsample for these data, please see Ballard-Rosa (2014).

The literature on sovereign default has converged on a limited set of important macroeconomic factors considered significant predictors of debt default.[36] Most obviously, a country's level of existing debt has been repeatedly associated with default crises, as countries without

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[34]I found a handful of small discrepancies in the dataset provided versus the codebook from Reinhart and Rogoff, and so there were a very small number of cases where I corrected the dataset to accord with the codebook, which primarily required adding a few cases of "near default" to the data.

[35]Measures of democracy are taken from the *DD* dataset in Cheibub, Gandhi and Vreeland (2010).

[36]See Bandiera, Cuaresma and Vincelette (2010, p2)

large debt burdens are unlikely to face serious trouble in servicing debt or correcting fiscal imbalances. I therefore include in all specifications a measure of *debt-to-GDP*, drawn from Reinhart and Rogoff (2010). Given that there are several developed democracies with very high debt loads which have never defaulted, I also include the square of debt-to-GDP to allow for a posited inverted-U shape in debt and default. In addition, it is standard to include a measure of *GDP per capita*, which I draw from the World Bank's World Development Indicators (WDI) and which, following normal practice, enters logged into each specification. Work by Kraay and Nehru (2006) on predicting default instances in the developing world highlights the importance of "shocks" in triggering debt crises; in their paper, they take *change in GDP* as capturing economic shocks generally, and I follow this approach as well. The dangers posed to a country's financial security by macroeconomic instability, as proxied by inflation rates, is emphasized in the recent summary of the literature by Bandiera, Cuaresma and Vincelette (2010), and so to address this concern I include a measure capturing whether a country is facing an *inflation* crisis.[37] Much work on debt default controls for the effect of economic openess on a country's debt levels, and so I include as well a standard measure of *trade* as the sum of a country's exports and imports over GDP. Finally, given that many developing countries borrow money not denominated in domestic currency, it has been proposed that a country's level of *foreign reserves* may impact its capacity to service international debt, and so I also include a GDP-scaled measure of foreign reserves.[38] These seven macroeconomic factors (debt/GDP, debt^2, per capita GDP, change in GDP, inflation, trade, and foreign reserves) have been consistently associated with external sovereign debt default in the literature on the subject, and so I use these seven factors as a baseline economic model in predicting years in default.[39]

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[37]Taken from Reinhart and Rogoff (2009).

[38]Data for GDP per capita, change in GDP, trade, and foreign reserves are all drawn from the WDI.

[39]I found that there existed non-trivial amounts of missing data scattered throughout several of these macroeconomic factors, and therefore chose to employ multiple imputation techniques to help deal with concerns that might arise due to the inefficiency or bias that can result from standard listwise-deletion

In addition, in order to test my hypothesis that more rural democracies will face greater difficulty in adjusting to fiscal crisis, I introduce a measure of *rural population share*, which measures the percentage of the total population in a country which lives in a rural area.[40] Given comparative statics from the theoretical model developed above, I expect rural population share to be positively correlated with external debt default in democracies.

My baseline empirical model is of the following form:

$$default_{it} = \beta_1 rural_{it-1} + \gamma \mathbf{X_{it-1}} + \eta_i + \theta_t + \epsilon_{it} \tag{14}$$

where β_1 is my main effect of interest to be estimated, $\mathbf{X_{it-1}}$ is a vector of the seven macroeconomic controls introduced above (*debt/GDP, debt^2, GDP per capita, change in GDP, inflation, trade* and *foreign reserves*), γ is a vector of coefficients to be estimated on each of these macroeconomic factors, η_i and θ_t are country and year fixed effects, and ϵ_{it} is the error term, with standard errors clustered at the country level to account for within-country correlations including serial autocorrelation in the data. Given my hypotheses, I expect larger rural populations to make democracies more likely to default (I expect $\beta_1 > 0$). In order to facilitate interpretation of marginal effects, I first present results estimating this equation using OLS, and subsequently show that the results are not substantively changed when instead it is estimated under a host of alternative models including fixed-effects probit or logit, conditional logit, or random-effects probit.

3.2 Results

To begin, I motivate the larger empirical project with a simple finding: more rural democracies are more likely to default on their sovereign debt, as can be seen in Column 1 of Table 1

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approaches (King et al. 2001). A full discussion of the imputation procedures taken, as well as sensitivity of my results to these choices, is presented in an online appendix.

[40]Taken from the WDI.

which shows that this relationship holds under basic bivariate OLS. Of course, this bivariate relationship may ignore a host of potential economic confounds between countries that are more rural and those that are more likely to default, and so Column 2 introduces the full set of economic controls discussed above and reports full estimation of Equation 14. As can be seen, several of these standard macroeconomic factors are indeed significant predictors of default – as might be expected, countries with more debt are more likely to default, although the significance of the quadratic term on debt as well suggests that this effect may taper down at extremely high levels of debt (as is the case, for example, in Japan). Inflation crises appear to be positively and significantly associated with debt default, while countries with greater stores of foreign reserves are less likely to default on their sovereign debt, exactly as one would expect. However, note that the sign and statistical significance of the effect of rural population share on democratic default does not change with the introduction of these macroeconomic factors – in fact, the size of the coefficient hardly changes at all.

[Table 1 about here]

Of course, some may argue that the finding that more rural democracies are more likely to default is not of much interest, as there are at least four basic stories that could explain the correlation between rural population size and sovereign debt default. First of all, the most obvious account is that I have simply replicated a well-known finding that more economically developed countries are less likely to default – any correlation here should therefore be removed when controlling for *GDP per capita*. Second, while Ballard-Rosa (2014) finds that less populated autocracies are less likely to default, it may be that either smaller countries are more vulnerable to trade shocks, say, or that less densely populated developing countries may be more difficult to govern effectively and therefore also more likely to default (Herbst 2000). If true, controlling for overall *population size* or a measure of average *population density* should do away with the effect of rural population in particular. Finally, many

developing countries have relied on agricultural exports to generate foreign exchange, but this reliance on agricultural exports may have also made these countries more susceptible to external shocks that could lead to default. Thus, the correlation between rural population size and democracy I have found may simply reflect the greater fragility of agricultural-export economies, and so I also include a measure of *agricultural exports*, scaled by GDP.

Column 3 of Table 1 shows that, even after controlling for these other obvious potential explanations for democratic default, the share of the population that lives in rural areas still exhibits a strong and statistically significant effect. In fact, it is worth noting that the coefficient on rural population is virtually unchanged with the inclusion of these other factors, suggesting that there is indeed something else driving the observed association between rural population share and default. Not only is this effect statistically significant, but it is also of large substantive size – interpreted in the context of a linear probability model, these results suggest that an increase in the proportion of the population that is rural by 20 percentage points (roughly a one-standard deviation increase) would make a democracy about 26 percentage points more likely to default on its sovereign debt.

Yet, even if I have failed so far to find a proper macroeconomic explanation for the effect of rural population share on democratic default, this certainly does not prove that the effect is itself *political* in any manner. Ballard-Rosa (2014) has suggested that, if anything, the opposite effect should hold in non-democracies – Column 4 therefore repeats the same analysis as in Column 3, save that I take non-democratic default as my outcome of interest. If rural population share is still merely a correlate of economic development, then it is unlikely that its effect on sovereign default should vary across regime types. However, in contrast to the results discussed immediately above for democracies, rural population size in autocracies is found to be significantly *negatively* associated with debt default. Further comparison of columns 3 and 4 provides additional suggestive evidence that my measure of rural population share indeed identifies a political dynamic: observe that, other than rural population share,

every other coefficient in the autocratic and democratic default regressions is of the same sign.[41] That is, the substantive sign of every other macroeconomic factor moves in the same direction both in autocracies and in democracies, suggesting that economic factors which predict default in the two regime types may be similar. It is only those factors which I have identified as important drivers of the political dynamics of default, which I expect to vary by regime type, that actually demonstrate sign switches between the two models.

3.2.1 Political explanations for default

Having established that there does exist a robust and significant difference in the association between rural population share and sovereign default in democracies versus non-democracies, I now add several other factors that have been identified in the limited existing work on democratic default as important correlates of sovereign default in democracies. First of all, much work on the political business cycle has suggested that the incentives for democratic politicians to enact structural reforms are likely to be reduced in years prior to elections; this effect may be particularly pronounced when the electoral margin of victory is expected to be close. As such, I include an indicator for whether an *election* was expected in the following year, as well as a measure of the electoral *margin* of victory, which is calculated by subtracting the proportion of votes won by the most successful opposition party from the governing party's vote share.[42] In addition, it has been suggested that coalition governments with more veto players are less likely to default, and so I also add a measure of the number of *veto points* in a given polity, as well as a measure of the degree of *government fractionalization*,

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[41]With the possible exception of trade, although the coefficient in both models is very close to zero and not significant in either.

[42]All of these political measures come from the DPI. Note that, as my primary empirical specifications involve the use of country fixed effects, I am essentially unable to include one of the other major common explanations for democratic default – namely, electoral institutional arrangements. Kohlscheen (2010) finds, for example, that parliamentary regimes are much less likely to default than are presidential ones, and Saiegh (2009) argues that coalition governments, such as those commonly found in proportional representation systems, default less often than do single-party governments. Unfortunately, there are simply not enough instances of a country changing electoral institutions in my sample to effectively estimate the impact of such institutions within a fixed-effects framework.

which gives the probability that two randomly selected members of government are from different parties.[43]

[Table 2 about here]

Column 1 of Table 2 shows that, of these additional political explanations, only the presense of an impending election appears correlated with democratic default at conventional levels of significance. That is, these findings suggest that sitting governments, fearful of disturbing slim electoral majorities during the run up to an election, are often unwilling to undergo austerity measures and thus are more likely to default. This finding also is supported equally well by a number of cases in the qualitative literature in which new governments come to power, especially following an economic crisis, and engage in painful economic restructuring under an electoral mantle of change after an election has already taken place.

Government fractionalization does not seem correlated with democratic default; for those familiar with the limited empirical work on democratic default, this (non-)finding may seem particularly surprising given that both Saiegh (2009) and Kohlscheen (2010) find that coalition governments are less likely to default. In contrast to these papers, however, my theory suggests that sovereign default should be particularly likely when the electoral swingness of rural voters is greater, as should be the case when divided governments are forced to include rural forces as part of a governing coalition. That is, all else equal, as government coalitions become increasingly fractionalized (more dependent upon a larger number of smaller parties), the likelihood that rural political groups will be an important constituency that executives will be afraid of displeasing should increase.[44] Given this argument, I expect fractionalized

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[43]Thies and Porche (2007) investigates the politics of agricultural protection in developed democracies, and finds that both impending elections and greater party fragmentation predict more favorable agricultural trade policies.

[44]Park and Jensen (2007) makes a similar argument with respect to agricultural subsidies, finding that more fractionalized governments are indeed more likely to pander to rural producers with agricultural support.

governments in largely rural societies to be especially likely to default, suggesting the inclusion of an interaction term between government fractionalization and rural population. The final column of Table 2 adds this interaction, and shows that, in support of my theoretical expectations, more divided and more rural governments are indeed more likely to default on their sovereign debt, and that this effect is increasing both in the degree of government fractionalization as well as in the rurality of the electorate.

3.2.2 Food exporters versus importers

Yet one may worry that the tests I have run so far are not truly a fair representation of the theoretical predictions borne by the formal model discussed above – while it is true that my model finds that countries with larger and more electorally critical rural populations should be more likely to default on their sovereign debt, it also suggests that the fiscal burden of domestic agricultural subsidization should be felt primarily in countries that are net food exporters. I therefore repeat in Table 3 the regressions from Tables 1 and 2, dividing the sample first into only those countries that were net food exporters (Columns 1-3) and then focusing instead on countries that were net food importers (Columns 4-6).[45] Recall that, absent my theory, much of the literature on default would suggest that food exporters would be less likely, all else equal, to be forced to default on their sovereign debt, as agricultural exports often provided a source of much needed foreign reserves. In contrast, one might worry especially about the opposite group, those that import food, as being particularly vulnerable to debt troubles, as critical food imports would compete with debt repayment for scarce foreign currency.

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[45]As nearly all countries export at least some tiny amount of food products, it would not be possible to generate a sample of countries for which food exports were literally equal to zero. Instead, I have identified those countries that are *net food exporters* as those countries for whom the value of food exports exceeds the value of food imports in a given year. Alternatively, one could also identify those countries that export some very small amount of food (say, those in the 25th percentile or below of exports) as being non-food exporters; results using this alternative specification are essentially identical to those I present below.

However, once I divide my sample of countries into net food exporters and importers, I find that while the positive effect of rural population shares remains a strong and significant predictor of default in food exporting democracies, the effect vanishes once we turn to the food importing subsample, exactly as my theory would predict if what is truly driving these default decisions by democratic leaders is the fiscal burden imposed by large agricultural subsidy policies.

3.2.3   Above- and below-average rural population shares

My formal model additionally suggests that the effect of an increase in the rural electorate on the likelihood of democratic default may be conditional on current rural population size. That is, I expect the electoral composition effect of an increase in rural voters to dominate in countries that already have larger rural populations. To test this hypothesis, I disaggregate my sample again by dividing countries into those that are above or below the democratic average rural population share of approximately 37%, and then run the same estimating models as previously discussed. Table 4 reveals that, indeed, the effect of rural population share on the likelihood of democratic default appears to arise entirely in the subsample of democracies with above-average rural population shares, as suggested by my theory.

3.3   Robustness checks

3.3.1   Alternate estimation assumptions

As is commonly the case in regression analysis, one may worry that my choice of estimating models may bias my results for a number of potential reasons. To begin, many criticize the use of OLS for binary dependent variables like my own, arguing that OLS may provide

predicted values outside the logical zero to one range of outcomes. I therefore re-run both my baseline and my full specifications in Table 5 using either probit (Columns 1 and 2) or logit (Columns 3 and 4), depending on the specification of the error term. In addition, while fixed effects specifications have become the norm in many areas of political economy, some worry that the introduction of a host of extra regressors may create inefficiencies in estimation, or even result in bias when the incidental parameters problem of maximum likelihood estimators invalidates asymptotic approaches. I also therefore report estimation using random-effects probit (Columns 5 and 6), which does not assume constant country-level effects, as well as under conditional logit, which does not suffer from the incidental parameters problem (Columns 7 and 8).

[Table 5 about here]

As can be seen, in none of these other models is the positive and significant relationship between rural population share and democratic default altered, even after including the full set of alternative economic and political controls. Thus, it seems unlikely that the effects I have identified above are simply the result of a particular estimation assumption biasing results in my favor.

3.3.2 Subsample checks and placebo tests

Of course, despite introducing a number of controls for potentially confounding effects of economic development that might jointly explain both rurality and the likelihood of default in democracies, the skeptic may remain unconvinced that the effect I have identified is still not essentially a product of country income. That is, it is well known that many poorer countries are also more rural, and the economic literature on default has consistently suggested that wealthier countries are extremely unlikely to default on their sovereign debt. Thus, even controlling for levels of GDP per capita, my regressions may simply capture the fact that

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the wealthy countries in my sample are much more urbanized and also, at least in the period under consideration, essentially never default.[46]

[Table 6 about here]

To further address these concerns, I re-run my primary analysis after dropping all OECD countries from my sample, alleviating concerns that any effect of rural population share on democratic default is actually driven by comparison of developed with developing countries. Column 1 of Table 6 shows, however, that even after I restrict my attention only to non-OECD countries, rurality still exhibits a strong and significant positive effect on the likelihood that a democracy is in default.

Another concern with my findings from above might relate to my inclusion of a government fractionalization measure, which gives the probability that two randomly selected politicians in government are from the same party. While such measures are more straightforward in countries with proportional representation (where government fractionalization is just the inverse of the Herfindel index of party fractionalization), it may seem odd to use them in majoritarian countries, where a governing executive is always from a single party. In addition, earlier work on democratic default has suggested that representational institutions are likely to affect default decisions, and so I repeat my investigation of the effects of party fragmentation on democratic default focusing alternately on countries with PR (in Column 2) or majoritarian systems (in Column 3). However, not only does rurality explain default in both of these subsamples, but the interaction with government fractionalization remains a positive and significant predictor of default in both as well.

Finally, I conclude this section on the robustness of my results by reporting several "placebo" tests. While this paper develops a theory linking rural electoral biases to democratic default, it is possible that my empirical results are instead capturing some underlying

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[46]Note that this sort of criticism ignores that, by including country fixed effects in my regressions, I am identifying off of *within-country* variation; that is, I am not comparing rural countries against urban ones, but rather periods of urbanization or rurality within the same country.

factor that, due to rurality, makes democracies more likely to face economic crisis in general. For example, one may worry that more rural economies are less diversified than urban ones, and as such, are less able to adapt to a changing international environment. If true, I should find that rural population share should be associated with higher rates of other sorts of economic crises as well, including currency, inflation, and banking crises. Columns 4 through 6 perform identical regressions to my main analysis, save that I take a different type of economic crisis as my dependent variable in each – as can be seen, rural population shares do not help explain any of these other types of economic trouble, helping to alleviate concerns that the relationship I identify between rurality and debt default is merely capturing the fragility of rural economies.

Thus, the positive and significant relationship between rural population shares and sovereign default I find appears to be robust to alternative covariate profiles, different econometric modeling assumptions, analysis on separate subsamples (including the elimination of all developed countries from the data), as well as several placebo tests. In the following section, I substantiate these aggregate associations with more detailed country-level evidence that rural-biased democracies do indeed face severe fiscal costs from agricultural subsidy programs, and that they are particularly unwilling to remove these subsidies when facing electoral challenges, potentially leading even to default on their sovereign debt.

4   Illustrative case

4.1   Turkey

For investigating a theory of the relative political influence of urban and rural groups under different political regimes, few countries could be of greater interest than Turkey. Turkey's modern political history has seen extended spells of democratic rule punctuated by several military interventions. In addition, it is a country where the needs of rapidly developing

urban industries have often been pitted against a large agricultural sector responsible for employing much of the country. And finally, it has been confronted with the need for structural adjustment in the face of fiscal crisis several times. Thus, Turkey seems an excellent case for demonstrating the relationship between rural electoral support and democratic default that I highlight as being an important driver of such decisions. In what follows, I detail Turkish experiences with adjustment and fiscal crises over the past 35 years, beginning with the build up to the major crisis experienced by the economy during the late 1970s and then turning to its subsequent financial meltdown in 2000-2001.

4.2   Build up to the first crisis

While Turkey (like much of the world) enjoyed relatively stable rates of growth through the 1950s, by the 1960s it began to experience sporadic current account and balance of payments problems that would continue to trouble it periodically for the next 40 years. As in many developing countries, such problems usually necessitated turning to the IMF for a stand-by arrangement to make available temporary funds intended to help Turkey bridge financing gaps during times of difficulty. The Turkish government initially tried to present its troubles as due primarily to world market forces outside of its control; however, over time it became increasingly clear that Turkey faced some serious structural imbalances.

While the workings of many international organizations often remain hidden behind closed doors to researchers, recently declassified internal documents from the IMF help make clear precisely what the Fund thought about the situation in Turkey. For example, in the minutes from an executive board discussion at the IMF in 1965 of a recent request by Turkey for a new stand-by agreement, one of the executive directors made clear that "the Turkish problem at present was less that of establishing and maintaining monetary stability," as had been argued by the Turkish authorities, "and more of remedying the structural weaknesses"

of the Turkish economy.[47] He then went on to elaborate on some of the specific details of the policies that were considered to be troubling: "in particular, the taxation of agriculture was still deficient, and tax collection generally presented a serious problem. Another structural weakness was the high dependence of Toprak (the Soil Products Marketing Organization) and the State Economic Enterprises and the Monopolies Administration on direct financial assistance from the Central Bank Government. This was partly a result of a shortage of working capital, but was also partly connected with certain price policies, which should be reconsidered."[48] For those unfamiliar with Turkish agricultural institutions, the Soil Products Marketing Organization (TOPRAK) was an arm of the central government responsible for purchasing, at established prices, specified agricultural products from rural Turkish farmers. In addition to TOPRAK, there also existed several other marketing institutions charged with a similar role in securing rural production at government-mandated prices, including several State Economic Enterprises (SEEs) as well as Monopoly Administrations. Thus, when forced to seek external financing in 1965 from the IMF, Turkey was specifically reprimanded by an executive director of the IMF for pursuing a costly project of agricultural price supports. Nor was this dissatisfaction with the agricultural pricing policies of the Turkish government a unique position – indeed, statements by the next four executive directors in the meeting all return to a similar critique of the way that rural producer price supports were funded by central government funds.[49]

Upon closer consideration of the actual text of the letter of intent sent by Turkey to the IMF explaining its need for additional financing, it is made apparent that (in explaining strains on the Treasury from the previous year) "[i]n 1964 owing to the record 1963 crops it was necessary to make special adjustments to the amount of Central Bank credit which the

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[47]1/29/65, p10

[48]Ibid., p10

[49]Beyond the statements by Mr. Lieftinck above, see subsequent similar worries expressed by Mr. Kirbyshire (pp11-12), Mr. Handfield-Jones (p13), and the director of the Exchange Restrictions Department (p14).

Soil Products Marketing Organization (TOPRAK) could use to help finance its purchases of domestically grown cereals."[50] Additionally, in a proposal to modify the stand-by agreement with Turkey discussed above submitted later in 1965, Turkish authorities again explain their violation of previous terms by noting that the "increase from LT 250 million to LT 450 million requested in the letter dated June 8, 1965...is necessary to finance a larger volume of purchases entailed by a much better crop. In a decree of June 10, 1965 the Council of Ministers raised the buying price of cereals by 6-10 percent."[51] In other words, one of the main justifications offered by Turkey for needing external financing is the strain placed on the central government's budget by purchases of exceptionally large cereal crops. Yet, why should these purchases merit a loss to the government at all? Shouldn't it simply be able to re-sell these commodities, thereby reducing any fiscal impact of such producer support policies? Indeed, as I discuss above, the cost of such a policy should come only when the government is unable to re-sell these goods, or is forced to do so for less than the price it paid. In fact, as made clear in Figure 1, taken from a letter from Turkey's Minister of Finance to the IMF in June of 1965, this was precisely the position that TOPRAK found itself in. While it expected to need LT 795 million for crop purchases and operating expenses, it expected to recoup only about a quarter of this (LT 215 million) from domestic sales, and amazingly lists expected revenue from exports at a mere LT 1 million![52] Thus, even accounting for subsidies from the Treasury against losses, TOPRAK's crop purchasing scheme is expected to result in a loss of nearly LT 500 million.

[Figure 1 about here]

However, while internal IMF documents make clear that the executive directors were

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[50]1/29/65b, p5

[51]7/20/65, p4. Note that this letter also highlights additional financial pressures arising from subsidized purchases of sugar and tobacco (see p5).

[52]Later reports make clear that this lack of crop exports is a direct result of the producer price paid by the government being so high as to make Turkish grains non-competitive on the world market. This leads to a build-up in Turkish grain stocks which are only reduced when the mandated selling price for exports is lowered to become closer to the going world market price.

unhappy with this arrangement, at the end of the day the Fund still approved the SBA for Turkey, arguing that "the increases in the two limits mentioned above, in the staff's view, are warranted in the particular circumstances of the Soil Products Marketing Organization."[53] Perhaps this case of unexpectedly large agricultural harvests placing undue stress on government finances was a one-off situation. Nor did this case lead to a prominent fiscal crisis for Turkey – this was not to come until the late 1970s.

4.3   The crisis of 1978-1979

By the time Turkey turned to the IMF for emergency financing in 1978, it was clear that the Turkish economy was in a state of serious fiscal disequilibrium. Above, I have emphasized that I expect democratic rulers reliant on agricultural price subsidies for political support to be particularly unwilling to remove these subsidies in the face of fiscal crisis. Given the centrality of agricultural subsidies in general, and producer prices supports in particular, to my theory of democratic default, a brief discussion of the structure of Turkish agricultural policy is in order. Thankfully, one year prior to the eruption of economic crisis in 1978, the IMF prepared for the GATT background material on the state of the Turkish economy, including detailed discussion of agricultural policy, which I quote in length given its relevance:

> In Turkey agricultural support prices are set for a number of products each year. Government agencies and sales cooperatives are obliged to purchase at the officially set support price any amount of these agricultural products offered to them by the farmers. The Government provides funds for the support purchases through the Central Bank, and absorbs any losses incurred by the intervening agencies in purchasing, storing, and selling the commodities in question. This system, which aims at preventing large fluctuations in agricultural incomes from year to year, is often a burden on public finances, particularly at times when unrealistic pricing vis-a-vis developments in international markets leads to export bottlenecks. In 1977 support prices were adjusted marginally...especially for important agricultural commodities such as wheat and cotton, which were also

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[53]7/20/65, p7

export items. This was done with the purpose of not aggravating the discrepancies between domestic and foreign prices for these products, since prices of wheat and cotton had exceeded world market prices since late 1976.

Thus, the Turkish case in the lead-up to its crisis in 1978 seems to fit the theoretical case I detail above almost perfectly – it is a country that makes costly government interventions into agricultural producer prices, often setting these above the world price. Yet perhaps these interventions were small in scale, or not considered to be particularly distorting to the broader macroeconomy?

In addressing this concern, the Turkish letter of intent to the IMF in 1978 is of exceptional interest. It begins by noting that "[t]he purpose of the stand-by arrangement is to support the policies that have been and are to be adopted by the Government of Turkey to strengthen to balance of payments position...The key element of the adjustment program is to reduce the borrowing requirement of the public sector."[54] This sort of introduction is standard for countries turning to the IMF while facing fiscal troubles – it says that the country understands that imbalances that have placed it in jeopardy are generally related to public sector overspending. What is of particular importance, however, are the suggestions that the letter offers for ways that the government can address these imbalances. In this case, the *very first* specific policy recommendation is that "[i]t is the intention of the Government to establish support prices for agricultural export commodities at levels consistent with world prices;" the second policy proposal notes that "[t]he Government has traditionally provided subsidies through the consolidated budget. The Government realizes that a sustainable policy for the future requires SEEs to adjust prices and fees...to ensure that planned public sector investment can be carried out without undue recourse being made to the Central Bank."[55] In other words, the first two policy proposals made by the government, in attempting to address its fiscal imbalances, both relate to government intervention in pricing policies, especially in the

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[54] 3/27/78, p1
[55] 3/27/78, p1

agricultural market.

This proposal was sufficient to win IMF backing of a stand-by arrangement in early 1978. Yet, by the middle of the year, it was clear that the Turkish government was unable to follow through on a number of the conditions set as terms for emergency financing, and it was forced to request a waiver of several performance criteria. In evaluating this request, the IMF noted that despite some progress in addressing fiscal imbalances, "the immediate prospect is for erosion in some areas. The Government has made efforts to avoid excessive increases in agricultural support prices...As a result, the fiscal position is likely to deteriorate and the objective stated in the Letter of Intent...is not now attainable."[56] While the IMF was willing to allow suspension of the performance criteria requested in September, by December compliance by the government had deteriorated so much that "the IMF's monitors in Turkey reported that the Turks were not complying to the conditions attached to its standby credit, and suspended further disbursements in the absence of more stringent austerity measures...While the amount of IMF funds withheld was not a critical element in Turkey's overall restructuring, the Fund's judgment that Turkey's adjustment program was not sufficient had a crucial impact on OECD creditors, who refused to furnish the Turks with new loans if a second IMF adjustment package was not approved."[57] In other words, due to its inability to apply the structural adjustments stipulated as conditions to further emergency funding, the IMF withdrew its support from Turkey, effectively cutting off all other sources of outside finance and moving Turkey into default.

What explains this inability to adjust, especially on costly agricultural subsidies, by the Turkish government? On this point the secondary literature seems largely in agreement – operating in an extremely fragmented political environment, Turkish politicians were unwilling to suffer the electoral consequences of alienating their voter base. For example, Celasun

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[56]9/15/78, p8

[57]Carvounis (1984, p91)

and Rodrik (1989, p656) argue that the "reduction in government spending was only half-hearted...The governments in power were too cautious of political support to administer radical shock treatment and too divided to implement any feasible alternative." In similar fashion, Carvounis (1984, p95) notes that, with "the Turkish polity and parliament split down the middle, neither the RPP nor the JP was able to reduce growth rates or current consumption without fear of undermining their popular support, and both solved the problem by borrowing abroad. As debt service on these loans became more burdensome, neither Ecevit nor Demirel [leaders of the two main political parties] ever enjoyed sufficient parliamentary support to put through unpopular stabilization measures." Yet these accounts merely highlight that politicians were unwilling to hurt their support base generally – this does not prove that agricultural support was afforded any special electoral position.

In explaining the thrust of Turkish agricultural policy, Ilkkaracan and Tunali (2009) provide several motives for continued producer support prices, including food self-sufficiency and containment of urban-rural migration. Yet "an equally important motive was a hard-learned lesson in politics: rural voters with strong ties to land have had a say in election outcomes ever since multiparty politics began" (107). Later analysis of the failure of Turkish structural reform by the IMF (2005, pp14-15) is especially specific on this point: "[a]t the same time, weak governments consisting of multiparty coalitions and facing frequent elections also had the incentive to patronize their electoral supporters and abandon fiscal discipline. In particular, the agricultural sector...had to be repeatedly compensated for electoral advantage." Thus, Turkey in 1978 seems a clear case in which democratically elected rulers, paralyzed by fear of losing key rural electoral support in a highly fragmented environment, were unable to implement reforms in costly agricultural pricing policy as demanded by the IMF, and therefore were forced to default on international loans.

4.4 Military intervention, 1980-1985

Yet Turkey was able, just a few short years later, to implement several sweeping structural adjustment programs, including removal or substantial reduction of agricultural support prices. What had changed? Most obvious, of course, was a military coup which suspended electoral competition in Turkey beginning in late 1980, and which lasted effectively until freely contested elections were fully reintroduced in 1985. Where democratically elected governments were unable to reform Turkey's failing economy, an autocratic military regime managed to do away with many of the costly and inefficient State Economic Enterprises plaguing the Turkish economy.

In their summary of Turkey's "successful" reforms during this period, Celasun and Rodrik (1989, 678-679) ask "whether the 1980-1985 policy episode had any missing element in an important sense. Our answer is an affirmative one, and we suggest that broad political participation and contestation were crucial elements missing in this important national experience." More specifically, they note that the "bulk of the 1980-1985 program coincided with transitional military rule in Turkey, such rule having been instigated essentially on non-economic grounds [and that] the prevailing restrictions on political participation and contestation were clearly instrumental in providing the technocrats with the requisite autonomy to introduce a wide range of radical reforms and the ability to withstand the distributional consequences." Note, firstly, that this suggests that autocratic elites were able to do away with rural transfers because they did not perceive rural actors to be a political threat. This substantiates the distinction developed in Ballard-Rosa (2014) that non-democratic leaders should generally only favor urban interests, as the capacity for collective revolt in rural areas is low. In addition, the rapid about-face in Turkish agricultural policy following a dramatic change in political institutions again suggests that, while rural actors may be particularly potent electoral agents, this political influence is not universal.

This is perhaps made most explicitly clear by considering the evolution of Turkish agri-

cultural policy following reinstitution of competitive elections in 1985. At the time, the sitting Prime Minister in Turkey was Turgut Ozal, a man who as finance minister under the military had promoted and implemented an extremely hawkish budget policy, including explicitly denouncing the distortionary costs of agricultural subsidies. Ilkkaracan and Tunali's (2009, 107) account of Ozal's response to change in political institutions dictating executive survival is worth repeating in full:

> After decades of [agricultural] protection, the macroeconomic policy reorientation unleashed in 1980 *under the mantle of a military regime* dismantled price supports and introduced the agricultural sector to the whims of the global market. As imported agricultural commodities flooded the market, local agricultural prices fell and aggregate output increased, giving Prime Minister Turgut Ozal an early opportunity to boast of the virtues of the liberal stance he championed. Following the restoration of freely contested elections, however, Ozal discovered that his liberal policies *did not provide the best election platform.* As his second term as Prime Minister came to an end, the third looked more and more elusive. He desperately revived the policies he had vehemently opposed, *in an effort to win back the rural vote.* This ushered in a new era of agricultural supports as his victorious competitors followed suit. According to the OECD, supports to the agricultural sector, which claimed 3.5 percent of GDP in 1988, crept up and reached their peak of 6.7 percent during 1997-1999...Agricultural supports contributed to the large budget deficits and high inflation that marked the 1990s.

Thus, an identical individual ruler, who had been a fierce critic of agricultural support prices while backed by non-democratic military rule, changed his position to favor costly agricultural subsidies as soon as democratic competition returned to Turkish politics. The OECD (2011, 10) summarizes clearly the effect that a resurgence in agricultural price supports (following the restoration of democracy) had on the broader Turkish economy: "Besides affecting price formation, weak budget constraints on agricultural SEEs and ASCUs have led to poor financial discipline. Financial losses due to intervention purchasing by ASCUs, the Turkish Grain Board, the State-owned Tobacco Enterprise and the State-owned Sugar enterprise, coupled with borrowing by the SEEs from commercial banks at relatively high interest rates, were key factors in the country's economic turbulence in the 1980s and 1990s."

The end result of such turbulence, of course, is likely familiar to many readers – in 2001, Turkey again came to the brink of financial ruin, and triggered another external sovereign debt crisis.

5   Discussion

Why do democracies default on their sovereign debt? In this paper I argue for a rural electoral bias in many democracies resulting in costly agricultural support policies that, when the country is faced with fiscal crisis, may prove politically suicidal for sitting executives to remove. Thus, I expect to find democracies with a larger and more influential rural electoral base to be less able to reform costly subsidy programs, and therefore more likely to default on their sovereign debt. In support of this hypothesis, utilizing panel data covering 55 countries over the past 40 years, I show that even after controlling for a host of alternative economic explanations, rural population size remains a positive and significant predictor of democratic debt default. Nor does this effect appear to be the result of specific estimating assumptions – inclusion of a host of alternative covariate profiles and estimation under several different econometric models consistently finds a positive relationship between rurality and democratic default. However, in support of my theoretical model, this effect is found to apply only to that subset of countries who are net food exporters, as these are the countries I identify where agricultural support policies should constitute a fiscal burden.

While sovereign default clearly involves consideration of economic circumstances, this paper provides theoretically-grounded and empirically-robust evidence that default is also a political decision. Indeed, as noted by Cox (2012), the decision to default ultimately rests with political actors in essentially every country, and so it should be surprising to find that these decisions are not affected by the calculus of political survival. Additionally, this paper complements other recent research on the politics of default in non-democratic

countries (Ballard-Rosa 2014), and emphasizes the importance of investigating more deeply the geographical distribution of political influence across regime types.

Yet while these findings support a theory of rural-biased democratic rulers fearful of removing costly agricultural protection at the aggregate level, my theory is ultimately grounded in micro-level arguments about the responsiveness of individual voters to different types of policy. The current paper cannot present more than cursory qualitative evidence to speak to this subject, but in future work, I hope to shed additional light on the micro-foundations of this theory through original survey work in developing countries explicitly designed to isolate urban and rural responsiveness to food policy changes.

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6 Tables and Figures

Table 1: Democratic sovereign default, 1970-2008

VARIABLES	(1) Bivar.	(2) Econ.	(3) Other expl.	(4) Autoc.
Rural pop. (% total pop.)	0.015***	0.013***	0.015***	-0.022***
	(0.005)	(0.005)	(0.005)	(0.006)
GDP per capita (logged)		-0.034	-0.012	-0.105*
		(0.05)	(0.054)	(0.059)
Δ GDP		-8.56e-14	-9.13e-14	-1.91e-13
		5.44e-14	5.58e-14	3.66e-13
Debt/GDP		0.002***	0.002***	0.004***
		.0007227	.0007468	(0.001)
Debt^2		-2.07e-06***	-2.14e-06***	-4.08e-06***
		5.85e-07	5.95e-07	1.62e-06
Inflation		0.111***	0.115***	0.01
		(0.045)	(0.044)	(0.053)
Trade		0.002	0.002	-.0002752
		(0.001)	(0.001)	(0.002)
Foreign reserves		-0.598***	-0.62***	-0.285
		(0.206)	(0.202)	(0.269)
Population (logged)			0.165	0.59*
			(0.142)	(0.306)
Population density (per km^2)			-.0006766	-0.003
			.0009217	(0.003)
Agr. exports / GDP			0.495	1.168
			(2.024)	(1.467)
Constant	-0.448**	-0.172	-1.986	-3.648
	(0.209)	(0.502)	(1.701)	(2.93)
Observations	1,621	1,621	1,621	937
# countries	55	55	55	42

*** p<0.01, ** p<0.05, * p<0.1

OLS regressions of democratic sovereign default on rural population share, with country and year fixed effects and standard errors clustered by country (multiple imputation estimates). I have suppressed the constant term, as well as any included fixed effects, for ease of presentation.

Table 2: Political explanations of democratic debt default

VARIABLES	(1) Political	(2) Polit. plus interact
Rural pop. (% total pop.)	0.015***	0.014***
	(0.005)	(0.005)
GDP per capita (logged)	-0.026	-0.032
	(0.054)	(0.053)
Δ GDP	-9.32e-14*	-9.92e-14*
	5.57e-14	5.66e-14
Debt/GDP	0.002***	0.002***
	.0007228	.0007201
Debt^2	-2.11e-06***	-2.06e-06***
	5.78e-07	5.75e-07
Inflation	0.108***	0.107***
	(0.045)	(0.043)
Trade	0.002	0.002
	(0.001)	(0.001)
Foreign reserves	-0.588***	-0.635***
	(0.2)	(0.201)
Population (logged)	0.161	0.136
	(0.126)	(0.126)
Population density (per km^2)	-.0005287	-.000602
	.0009931	(0.001)
Agr. exports / GDP	-0.016	-0.251
	(2.076)	(2.098)
Gov't fractionalization	0.075	-0.123
	(0.053)	(0.102)
Rural pop. X gov't fract.		0.005**
		(0.002)
Election (t+1)	0.013*	0.012*
	(0.007)	(0.008)
Regime age	0.004	0.003
	(0.003)	(0.003)
Electoral margin	-.0001647	-.0000684
	.0005561	.0005575
Constant	-2.058	-1.638
	(1.531)	(1.53)
Observations	1,621	1,621
# countries	55	55

*** p<0.01, ** p<0.05, * p<0.1

OLS regressions of democratic sovereign default on rural population share and economic/political controls (multiple imputation estimates). All regressions include country and year FE, suppressed for presentation, as well as standard errors clustered by country.

Table 3: Food exporters versus importers

VARIABLES	(1) Bivar.$_X$	(2) Baseline$_X$	(3) Polit.$_X$	(4) Bivar.$_M$	(5) Baseline$_M$	(6) Polit.$_M$
Rural pop. (% total pop.)	0.013***	0.015***	0.017***	-.0006163	0.005	0.005
	(0.005)	(0.006)	(0.007)	(0.002)	(0.003)	(0.004)
GDP per capita (logged)		0.003	.0001697		-0.104*	-0.079
		(0.074)	(0.075)		(0.058)	(0.081)
Δ GDP		-1.70e-13	-1.91e-13		-4.51e-14	-4.50e-14
		1.30e-13	1.28e-13		6.01e-14	6.32e-14
Debt/GDP		0.003***	0.003***		0.003	0.003
		(0.001)	(0.001)		(0.002)	(0.003)
Debt^2		-2.39e-06***	-2.41e-06***		-8.33e-06	-8.76e-06
		8.30e-07	8.25e-07		.0000105	.0000106
Inflation		0.114**	0.114**		0.043	0.038
		(0.053)	(0.053)		(0.052)	(0.049)
Trade		0.003**	0.003**		-0.002	-0.002
		(0.001)	(0.001)		(0.002)	(0.002)
Foreign reserves		-0.499*	-0.505*		-0.581***	-0.571***
		(0.294)	(0.279)		(0.218)	(0.239)
Population (logged)			0.121			0.079
			(0.141)			(0.25)
Population density (per km^2)			-.0005327			.0001035
			(0.001)			(0.001)
Agr. exports / GDP			-0.036			-0.556
			(2.569)			(3.394)
Election (t+1)			0.016*			0.007
			(0.01)			(0.014)
Electoral margin			.0001514			.0000664
			.0006979			.0008246
Gov't fractionalization			0.097			0.074
			(0.065)			(0.094)
Regime age			0.004			0.003
			(0.004)			(0.004)
Constant	-0.335*	-0.74	-2.13	0.103	1.078*	-0.019
	(0.199)	(0.714)	(1.752)	(0.08)	(0.577)	(3.094)
Observations	1,055	1,055	1,055	566	566	566
# countries	41	41	41	34	34	34

*** p<0.01, ** p<0.05, * p<0.1

OLS regressions of democratic sovereign default on rural population share and economic/political controls (multiple imputation estimates), with the sample split into net food exporters ("X") in Columns 1-3 and net food importers ("M") in Columns 4-6. All regressions include country and year FE, suppressed for presentation, as well as standard errors clustered by country.

Table 4: Above- and below-average rurality

VARIABLES	(1) Bivar.$_R$	(2) Baseline$_R$	(3) Polit.$_R$	(4) Bivar.$_U$	(5) Baseline$_U$	(6) Polit.$_U$
Rural pop. (% total pop.)	0.014***	0.014**	0.026***	0.008	0.006	0.009
	(0.005)	(0.006)	(0.008)	(0.008)	(0.008)	(0.01)
GDP per capita (logged)		0.027	0.035		-0.037	-0.036
		(0.058)	(0.068)		(0.043)	(0.059)
Δ GDP		-3.48e-13	-3.11e-13		-6.61e-14	-6.97e-14
		2.39e-13	2.40e-13		6.81e-14	7.43e-14
Debt/GDP		0.002**	0.003***		0.003	0.002
		(0.001)	(0.001)		(0.002)	(0.002)
Debt^2		-2.18e-06***	-2.19e-06***		-7.12e-06	-7.44e-06
		8.61e-07	8.03e-07		9.72e-06	.0000101
Inflation		0.099*	0.108*		0.143**	0.128*
		(0.057)	(0.056)		(0.071)	(0.074)
Trade		0.003*	0.002		-.0006248	-.0008457
		(0.001)	(0.001)		(0.001)	(0.001)
Foreign reserves		-0.31	-0.392		-0.706***	-0.646***
		(0.284)	(0.28)		(0.291)	(0.271)
Population (logged)			0.566**			0.016
			(0.246)			(0.18)
Population density (per km^2)			-0.002			0.002*
			(0.001)			.0009062
Agr. exports / GDP			1.356			-0.962
			(2.751)			(2.671)
Regime age			0.004			0.004
			(0.004)			(0.006)
Electoral margin			.0004595			-.0006747
			.0009874			.0006382
Gov't fractionalization			0.102			-0.01
			(0.066)			(0.062)
Election (t+1)			0.011			0.005
			(0.011)			(0.009)
Constant	-0.526**	-1.075**	-6.998***	-0.112	0.297	-0.093
	(0.261)	(0.532)	(2.677)	(0.168)	(0.495)	(2.276)
Observations	733	733	733	888	888	888
# countries	31	31	31	34	34	34

*** p<0.01, ** p<0.05, * p<0.1

OLS regressions of democratic sovereign default on rural population share and economic/political controls (multiple imputation estimates), with the sample split into those with above-average levels of rural population share ("R") in Columns 1-3 and below-average rural population share ("U") in Columns 4-6. All regressions include country and year FE, suppressed for presentation, as well as standard errors clustered by country.

Table 5: Alternate estimating models

VARIABLES	(1) Baseline$_P$	(2) Polit.$_P$	(3) Baseline$_L$	(4) Polit.$_L$	(5) Baseline$_{RE}$	(6) Polit.$_{RE}$	(7) Baseline$_{CL}$	(8) Polit.$_{CL}$
Rural pop.	0.108**	0.141***	0.178*	0.238**	0.058***	0.057***	0.202***	0.185***
	(0.055)	(0.06)	(0.102)	(0.111)	(0.015)	(0.016)	(0.034)	(0.055)
GDP pc	1.049*	1.122	1.844	2.064	0.771***	0.672	2.802***	2.327
	(0.607)	(0.744)	(1.225)	(1.522)	(0.191)	(0.451)	(0.382)	(1.486)
Δ GDP	-5.57e-12*	-4.90e-12**	-9.02e-12	-8.04e-12*	1.53e-13	0.004	-4.01e-13	0.014
	3.05e-12	2.48e-12	5.53e-12	4.76e-12	8.25e-13	(0.011)	1.63e-12	(0.035)
Debt/GDP	0.072***	0.073***	0.137***	0.14***	0.021***	0.017	0.065***	0.055
	(0.019)	(0.019)	(0.037)	(0.038)	(0.007)	(0.012)	(0.016)	(0.037)
Debt^2	-.0002***	-.0002***	-.0005***	-.0005***	-.00001	0.136	-.0001	0.287
	.00010	.00010	.00017	.00018	.00004	(0.341)	.0001	(0.717)
Inflation	0.599**	0.631**	0.987*	1.03*	0.693***	0.559	1.374***	1.178
	(0.303)	(0.306)	(0.596)	(0.604)	(0.166)	(0.366)	(0.313)	(0.764)
Trade	0.01	0.011	0.017	0.02	0.011***	-0.867	0.022***	-2.571
	(0.012)	(0.012)	(0.022)	(0.022)	(0.004)	(2.22)	(0.009)	(6.471)
Foreign res.	-9.566***	-9.727***	-18.471***	-18.223***	-4.98***	-3.623	-14.469***	-10.118
	(3.142)	(3.09)	(6.43)	(6.329)	(1.254)	(2.926)	(2.787)	(8.361)
Population		1.717		4.248		0.106		-1.494
		(3.366)		(6.499)		(0.171)		(2.09)
Pop. dens.		-0.011		-0.02		-0.005***		-0.017**
		(0.011)		(0.021)		(0.002)		(0.008)
Agr. exp.		12.632		26.909		-0.571		23.392
		(21.01)		(36.596)		(9.41)		(20.992)
Margin		-0.005		-0.008		0.002		0.001
		(0.006)		(0.011)		(0.003)		(0.007)
Regime age		0.015		0.033		-0.004		0.057***
		(0.027)		(0.047)		(0.007)		(0.022)
Election		0.151*		0.298*		0.07		0.128
		(0.085)		(0.168)		(0.08)		(0.149)
Gov't fract.		1.563***		2.699***		0.128		0.377
		(0.566)		(1.118)		(0.276)		(0.578)
Constant	-18.236***	-38.211	-30.613***	-79.726	-11.24***	-12.284***		
	(5.694)	(39.9)	(11.004)	(77.158)	(2.184)	(2.844)		
Observations	630	630	630	630	1,621	1,621	1,586	1,586
# countries	25	25	25	25	55	55	53	53

*** p<0.01, ** p<0.05, * p<0.1

Regressions of democratic sovereign default on rural population share and economic/political controls (multiple imputation estimates), using several different estimating models. Columns 1 and 2 report results from probit regression ("P"), 3 and 4 from logit regression ("L"), 5 and 6 from random effects probit ("RE"), and 7 and 8 from conditional logit regression ("CL"). The probit and logit specifications include country and year FE, although these are obviously not included either in the the random effects or conditional logit models. Columns 1-4 report robust standard errors clustered by country, while Columns 5-8 report bootstrapped standard errors resampled at the country level.

Table 6: Subsample analysis and placebo tests

VARIABLES	(1) No OECD	(2) PR	(3) Major.	(4) Currency	(5) Inflation	(6) Banking
Rural pop. (% total pop.)	0.026***	0.016**	0.041***	-.0001809	-.0005694	.0002611
	(0.01)	(0.008)	(0.012)	(0.005)	(0.005)	(0.004)
GDP per capita (logged)	-0.003	-0.049	0.056	-0.018	0.009	0.035
	(0.07)	(0.066)	(0.105)	(0.073)	(0.059)	(0.055)
Δ GDP	-7.04e-13*	-5.95e-14	1.50e-14	8.95e-14	2.60e-13***	2.09e-13***
	3.68e-13	6.31e-14	1.29e-13	8.78e-14	8.38e-14	7.76e-14
Debt/GDP	0.002**	0.003***	.0008494	.0005768	.0004675	.0003542
	(0.001)	.0009578	(0.001)	.0006833	.0006322	.0006038
Debt^2	-2.11e-06***	-2.42e-06***	3.17e-06	9.08e-08	1.13e-07	1.91e-07
	8.03e-07	7.18e-07	8.37e-06	5.24e-07	4.81e-07	4.60e-07
Inflation	0.087*	0.095**	-0.017	0.337***		0.224***
	(0.049)	(0.045)	(0.056)	(0.058)		(0.054)
Currency					0.297***	0.235***
					(0.035)	(0.031)
Banking				0.045	0.028	
				(0.037)	(0.032)	
Trade	0.003*	0.002	0.001	0.001	.0007527	.000602
	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)	.0009706
Foreign reserves	-0.293	-0.515**	-1.111	-1.067***	-0.928***	-0.911***
	(0.317)	(0.237)	(0.81)	(0.333)	(0.282)	(0.288)
Population (logged)	0.269	0.274	-0.895**	0.178	0.173	0.202
	(0.188)	(0.215)	(0.422)	(0.175)	(0.15)	(0.147)
Population density (per km^2)	-0.002	0.002*	-.0004084	0.002***	0.002***	0.002***
	(0.001)	(0.001)	.000727	.000698	.0006294	.0005706
Agr. exports / GDP	0.714	1.919	-2.167	-1.036	-1.822	-1.131
	(2.651)	(2.482)	(3.38)	(2.68)	(2.672)	(2.301)
Election (t+1)	0.022**	0.008	0.022	-0.017	-0.018	-0.017
	(0.011)	(0.009)	(0.019)	(0.013)	(0.013)	(0.014)
Rural pop. X gov't fract.	0.005	0.008***	0.007***	0.003	0.004	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Regime age	0.006*	0.004	-0.051***	0.004	0.003	0.003
	(0.004)	(0.004)	(0.009)	(0.003)	(0.003)	(0.003)
Gov't fractionalization	-0.131	-0.189	-0.134	-0.08	-0.117	-0.099
	(0.165)	(0.131)	(0.149)	(0.131)	(0.114)	(0.112)
Electoral margin	-.0001987	.000211	-.0001055	.0008263	.000552	.0006143
	.0007567	.0006517	(0.001)	.0008188	.0008388	.0007698
Constant	-3.702*	-3.272	9.171**	-1.353	-1.596	-2.085
	(2.067)	(2.508)	(4.632)	(2.064)	(1.722)	(1.706)
Observations	775	1,032	344	1,621	1,621	1,621
# countries	33	44	16	55	55	55

*** p<0.01, ** p<0.05, * p<0.1

OLS regressions of democratic sovereign default on rural population share and economic/political controls (multiple imputation estimates). Column 1 removes OECD countries from the sample, Column 2 looks only at default in countries with PR, Column 3 looks only at majoritarian democracies, and Columns 4-6 perform identical analysis using currency, inflation, and banking crises as the dependent variable. All regressions include country and year FE, suppressed for presentation, as well as standard errors clustered by country.

6.1 Figures

Credit requirements of the Organization for the purchase season
during the period of June 1, 1965-October 31, 1965 will be as follows:

	Million LT	
Value of 1.024.000 tons of cereal		727
Operational expenses		+68
Total		795
Domestic sales	215	
Exports	1	
Collections from receivables	63	
Subsidy from the Treasury against losses	28	
	307	-307
		488

Financing need of the Organization for the purchase season of five
months appears to be LT 488 million.

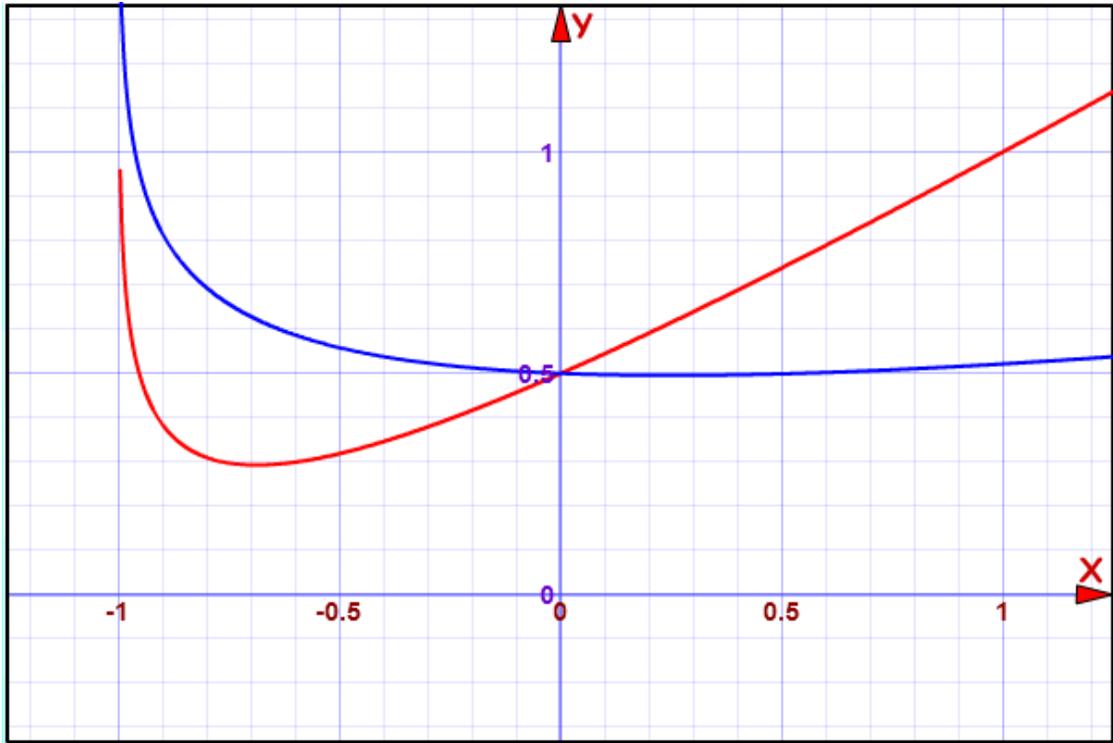Figure 1: *Summary of financial needs for TOPRAK, 1965.*

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Figure 2: *Probability of victory in urban-biased (blue) and rural-biased (red) systems.*

A Proofs

A.1 Costliness of agricultural subsidy policy is increasing in rural population share

To begin, recall discussion from above that, whenever $(\pi + \phi)\bar{b} < 1$, rural producers engage in "subsistence" farming – that is, they consume their entire crop, and do not participate in market exchange. This requires the entirety of domestic urban food demand to be imported; however, as this will be imported at a (lower) world price and sold at a (higher) domestic price, there will be no fiscal cost to the government of subsidization when rural actors are not market participators.

Focusing then on cases where $(\pi + \phi)\bar{b} \geq 1$, the cost of subsidies to agricultural producers is given by

$$C(\phi) = \begin{cases} \phi((1-\alpha)\bar{b} - \frac{1}{\pi+\phi}) & \text{if } \bar{x} \geq 1 \\ \phi((1-\alpha)\bar{b} - \frac{1-\alpha(1-\bar{x})}{\pi+\phi}) & \text{otherwise} \end{cases} \tag{15}$$

When $\bar{x} \geq 1$, it is immediately obvious that $\partial C(\phi)/\partial \alpha < 0$; that is, the cost is increasing as the size of the rural population increases.

When $\bar{x} < 1$, we find that

$$\partial C(\phi)/\partial \alpha = \frac{\phi(1-\bar{x})}{\pi + \phi} - \phi\bar{b} \tag{16}$$

which is decreasing in α whenever

$$1 - \bar{x} < (\pi + \phi)\bar{b} \tag{17}$$

However, observe that we have already assumed that $(\pi + \phi)\bar{b} \geq 1$, and as $1 - \bar{x}$ is clearly less than 1, this inequality will always hold true for the cases we consider. Thus, even

when $\bar{x} < 1$, it is still the case that the costliness of agricultural producer subsidization is increasing in rural population share.

A.2   Urban vote share function identical for all values of $\bar{x}$

When $\bar{x} \geq 1$, urban equilibrium indirect consumption utility is given by $\bar{x} - 1 - ln(\pi + \phi)$. This means that, when solving for the cut-point individual for the group (in terms of pro-incumbent party bias) with $\sigma_{iU} = \hat{\sigma}_U$ we get

$$\hat{\sigma}_U = \bar{x} - 1 - ln(\pi + \phi_C) - \bar{x} + 1 + ln(\pi + \phi_I) - \epsilon \tag{18}$$

which is equivalent to $\hat{\sigma}_U = ln(\frac{\pi + \phi_I}{\pi + \phi_C}) - \epsilon$.

On the other hand, when $\bar{x} < 1$, urban equilibrium indirect consumption utility is given by $ln(\bar{x}) - ln(\pi + \phi)$. Solving for the cut-point individual gives

$$\hat{\sigma}_U = ln(\bar{x}) - ln(\pi + \phi_C) - ln(\bar{x}) + ln(\pi + \phi_I) - \epsilon \tag{19}$$

which reduces to $\hat{\sigma}_U = ln(\frac{\pi + \phi_I}{\pi + \phi_C}) - \epsilon$. Thus, the marginal effect on urban vote share of a change in ϕ_C does not depend on whether $\bar{x} \gtrless 1$.

A.3   Different cost regimes as a function of subsidy and food trade

A.3.1   Regime I: Rural-biased export regime

In the case where the government raises the domestic price above the world price (sets $\phi > 0$) and the country is a net exporter of food ($(1-\alpha)\bar{b} - \Delta_b > 0$), any increase in subsidies creates greater fiscal strain on the budget. This results from increases in the cost of such subsidies on both the intensive and the extensive margins. When domestic agricultural production exceeds domestic demand, the government must purchase food from farmers at an inflated

domestic price, but then sell the excess on the international market at a lower world price. An increase in the subsidy, all else equal, will increase the wedge between the domestic and world prices, thus increasing the loss the government must take on a given level of purchases. In addition, any increase in the domestic price will also reduce domestic demand for food – for a fixed level of agricultural production, this will result in an increasing quantity of food that must be sold at a loss. In such a regime, increased agricultural subsidies may pose a serious threat to the government's fiscal position.

A.3.2   Regime II: Rural-biased import regime

However, the fiscal cost of providing above-market price subsidies to agriculture ($\phi > 0$) should be significantly reduced in countries that are net food importers ($(1-\alpha)\bar{b} - \Delta_b < 0$). The logic behind this is relatively straightforward: assuming that the government can sell the entirety of domestic agricultural production to domestic consumers at the going market rate, there will be no fiscal cost for intervention. In fact, if the country is able to import additional food at the lower world price, and then resell it to domestic consumers at the higher domestic price, this may actually represent a net fiscal boon for government.

A.3.3   Regime III: Urban-biased export regime

Turning to cases where the government chooses instead to subsidize food consumption (sets $\phi < 0$) and is a net food exporter ($(1-\alpha)\bar{b} - \Delta_b > 0$), it again becomes clear that government agricultural interference need not be a drain on state coffers. In this case, the government is able to completely satisfy domestic demand with domestic production, and thus incurs no cost from this transfer. In fact, if the government then sells excess production procured at a lower domestic price at the higher world price, this may actually help the government's fiscal standing. This type of regime is reminiscent of a number of cases identified by Bates (1981) in which urban-biased governments suppressed domestic agricultural prices in order

both to appease domestic consumers as well as to capture foreign reserves that could be transferred to industrial producers. However, it is worth noting that the vast majority of cases considered by Bates were non-democracies; in addition, this type of regime is not likely to be stable in a dynamic environment. Indeed, Bates (1981) argues explicitly that anti-agricultural bias in a number of African autocracies drove rural producers either to diversify into other crops or instead to move to urban areas – the effect of this dynamic was to turn several previous "breadbaskets" of the region into net food importers. Thus, while urban-biased food exporting regimes need not experience a fiscal impact of food subsidies in the short run, in the longer term this type of policy may push them to import food for a growing urban population with less agricultural domestic production.

A.3.4   Regime IV: Urban-biased import regime

Finally, in cases where the government subsidizes food consumption ($\phi < 0$) but is forced to turn to world markets to fulfill domestic food demand ($(1-\alpha)\bar{b} - \Delta_b < 0$), the fiscal costs of government agricultural interference again increase in the size of the price distortion. In a symmetric manner to the costs in Regime I, this operates on both the intensive and extensive margins. Most obviously, in a world where the government must buy food at a higher world price that is resold at a lower domestic price, a greater consumer subsidy generates a larger fiscal loss for any given amount of imported food. In addition, as the price of food falls at greater levels of subsidization, the demand for food will increase as well, which increases the quantity of food which must be imported. The costliness of this type of urban-bias in non-democracies, as well as its consequences for sovereign debt default, is discussed at length in Ballard-Rosa (2014); the theory presented here suggests that cheap food policies in food importing democracies should similarly strain the budget of such countries, particularly when urban voters are favored electorally.