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African Trade Policy in the 1990s: Political Economy or Technocratic Reforms?

by

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Abstract

The majority of African countries implemented import liberalisation in the 1990s. This paper explores factors that may explain the pattern of protection and of tariff reform. We consider political economy explanations, motivated specifically by the Grossman and Helpman (1994) model of protection in response to industry lobbies, and the possibility that reforms are technocratic. Using industry-level data for a sample of six African countries, we find limited evidence that political economy factors have influenced the pattern of tariffs or tariff reductions since the early 1990s. One result does appear frequently: relative sector size (measured by the number of employees or establishments) appears to be associated with the relative level of protection. We then explore various descriptive statistics for tariff changes in seven African countries. The analysis suggests that the pattern of tariff reductions was essentially technocratic in structure - across the board reduction in average tariffs and in the dispersion of rates, with larger proportional reductions for higher tariffs – consistent with policy reforms being guided by the World Bank. While political economy factors may have influenced the initial pattern of protection, the technocratic reforms since the early 1990s have diluted political economy influences on average and relative protection.

JEL Classification: F13, O20, O55

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1 Introduction

The majority of African countries have implemented significant liberalisation of trade since the 1980s, with reforms related principally to import liberalisation. The early reforms were driven by the World Bank, as trade policy featured prominently among the measures included in conditional lending (Greenaway and Morrissey, 2003). By the end of the 1980s, those sub-Saharan African (SSA) countries that had implemented trade reforms had largely eliminated quantitative import restrictions and export taxes (Morrissey, 1995), so subsequent reforms related mostly to further tariff reductions (Morrissey, 2002). Average unweighted tariffs have been roughly halved on average (for countries) in Africa over the period 1980-85 to 2000-02, from about 33% to 16%. North Africa reduced tariffs the least, and by 2000-02 had the highest tariffs of any region; Southern Africa has consistently had the lowest tariffs; while East and West Africa reduced tariffs the most since the 1990s (Ackah and Morrissey, 2005: Table 6). Although there is some evidence that this was associated with increases in imports, there is no consistent pattern linking the reduction in tariffs to the increase in imports (Morrissey, 2005); there is no indication that tariff reductions resulted in import surges (Jones and Morrissey, 2008). This may reflect the cross-industry pattern of tariff reductions, if tariffs were reduced least in those industries most susceptible to import competition, suggesting political economy explanations of tariff structure and reform. It may also be the case that tariffs were reformed in an essentially technocratic manner, eliminating peak or redundant tariffs with across the board reductions and rationalisation of other rates, so the average effect on imports was limited. The aim of this paper is to explore the extent to which underlying political economy or technocratic factors can explain the structure of protection and tariff reform in Africa.

The literature on the political economy of trade policy is vast; in what was at the time a ‘state of the art’ study, Magee *et al* (1989) has almost 50 pages of references and the literature has continued to expand. Major theoretical advances have refined the theory of endogenous trade policy (Helpman, 1997) and the measurement of trade distortions (Anderson and Neary, 2005). This has spawned a large empirical literature on political economy determinants of trade policy, although most studies relate to developed economies (Gawande and Krishna, 2003). Similarly, there is a significant literature on trade policy and reforms in SSA, reviewed in Morrissey (1995, 2002). However, there

is to our knowledge no study that attempts to apply political economy theories to trade policy in Africa. It is this gap that we aim to fill in the current study.

The literature, reviewed briefly in Section 2, suggests a large variety of possible variables to capture political economy influences on trade policy, but most of these are either inappropriate or unavailable for Africa. For example, there is no counterpart in Africa for the political contributions variable commonly used in studies of the US. Furthermore, data on structural features of manufacturing sectors (such as concentration ratios) or membership of industry organisations is not generally available. To identify a parsimonious set of political economy factors that are likely to affect trade policy we are motivated by the Grossman and Helpman (1994) model (hereafter G-H). This identifies three variables that determine the cross-industry pattern of protection: the inverse import penetration ratio (industry output divided by industry imports); the industry import elasticity of demand; and an indicator variable to capture whether an industry is politically organised or not. Although in the model political organisation is intended to capture lobbying contributions, in the African context it is interpreted as representing lobbying access to policy-makers or influence more broadly. Obtaining data on political organisation is very difficult, so we experiment with alternative proxy measures. We do not claim that G-H depicts the situation in Africa (and can reject the null hypothesis that it fits the African data): some observers of Africa may question the premise that African governments have an objective function that includes maximising population welfare, while firms are not usually organised at a sector-interest level. However, it does help to identify political economy variables.

Another limitation of the G-H model is that it is intended to explain the pattern of protection (or, in our case, structure of tariffs), whereas we are also concerned with the pattern of tariff reform. To address the latter, we conduct another empirical exercise to see if the political economy factors appear to influence changes in tariffs. As there does not appear to be any empirical model in the literature for the determinants of changes in tariffs, our approach is fairly *ad hoc* although motivated by the political economy literature; factors that play a role in determining tariff structures may be expected to influence tariff changes. Our model relates the change in tariffs to the change in imports, the import elasticity of demand and a manufacturing dummy variable. This is a very restricted set of variables, but only these are available in the data. The results of this specification are far weaker than the results for the estimation

of the G-H model; there is only limited evidence that political economy factors influence African trade policy reform.

It may be that we find little evidence of political economy influences on trade policy in the 1990s because these factors had 'pre-determined' the pattern of protection (before our sample observations) while the reforms implemented were essentially technocratic. In other words, the reforms may have been administrative adjustments reducing the level and dispersion of tariffs in a manner that preserved relative rates of protection. The principal motivation or impetus for reform in the 1990s came from the World Bank (and other donors with lending programmes) and commitments through membership of the WTO. These suggest technocratic reforms to reduce the distortions associated with tariffs, and neither necessitates dramatic reforms. To the extent that African countries have been required to reduce tariffs under WTO commitments this only relates to bound rates, which are typically above the applied rates. While the World Bank may have pushed for significant tariff reductions, countries often implement less reform than proposed (Greenaway and Morrissey, 1993), although Morrissey (2004) argues that conditionality has influenced trade liberalisation: whilst it is true that reforms (conditions) are rarely fully implemented within the (relatively) short period of a specific programme, over the longer term most developing countries have implemented significant policy reforms in the direction advocated by World Bank and donor conditionality. Morrissey and Nelson (2003, 2004) argue that global institutions such as the WTO and World Bank influence the process of trade policy learning and reform, for example by providing information on policy knowledge and choices (e.g. on which policies have worked elsewhere), on policy transfer and supporting implementation. If the pattern of tariff changes during the 1990s was responding to external influences it would be essentially technocratic in nature.

The paper is organised in the following way. Section 2 provides a brief overview of the political economy literature, especially the G-H model, to derive the main predictions. Section 3 applies the political economy model to data on tariff structure for five African countries (Egypt, Kenya, Morocco, Tanzania and Tunisia) for periods between 1990 and 2002. As this analysis relates only to tariff structure, Section 4 considers if available political economy variables offer any explanation for tariff changes; here we have data for a slightly different sample of six countries (Algeria, Ethiopia, Egypt, Kenya, Tanzania and Uganda) for various years within the period 1992-2003. Section 5

examines descriptive statistics for the pattern of tariff changes, considering the proposition that a technocratic reform would reduce the average tariff and dispersion of rates while preserving the distribution, adding Morocco to the sample used in the previous section. Section 6 presents the conclusion and discusses some implications.

2 Political Economy Models of Tariff Structure

Very broadly speaking, there are two approaches to formally characterizing the political economy of trade policy, namely referendum models and lobbying models.[1] While referendum models may be a useful reduced form for analyzing the public politics of trade policy, most current research emphasizes that, especially in the absence of a major role for trade in public politics, lobbying models are in some sense more basic as a framework for empirical work. Because the overall literature is immense, and well-served by survey papers, we can focus on that part of the literature directly relevant for the research reported here.[2] Thus, we will briefly discuss the theoretical literature on lobbying and then its empirical implementation.

Lobbying models seek to formalize the group-theoretic tradition from political science, in which rational individuals use real resources to pursue their preferred policies. This involves specifying an underlying economy, from which we can derive the effects of policy changes as comparative static exercises, and a political mechanism via which citizen-agents pursue their preferred policies (Hillman, 1989). The early literature was bifurcated between models in which the political decision-maker was active, but citizen-agents were not, and models in which citizen-agents were active put the political decision-maker was not. A standard reference of the first sort is Hillman's (1982) application of the Stigler-Peltzman model, in which the underlying political process is represented by a *political support function* which acts as a constraint on the political decision-maker's policy choice. The second sort of model is well-represented by Findlay and Wellisz (1982) who consider a game between two groups (a capital owning group and a labour owning group) to determine the tariff when faced by a state that passively registers the levels of lobbying.

[1] There are a very small number of papers that seek to analyze political economies in which citizens vote for candidates and then lobby for policy. To the best of our knowledge, none of these have been used as a framework for empirical work.

[2] Among the recent surveys, Helpman (1997) is an admirably clear introduction to the theoretical literature, while Gawande and Krishna (2003) does a fine job characterizing the current state of empirical research.

The literature on endogenous determination of trade policy experienced a major advance with the publication of Grossman and Helpman (1994) 'Protection for Sale'. G-H characterize the lobbying process as a common agency problem with groups as the principals and the political decision-maker as the common agent. This common agency problem is analyzed as a Bernheim and Whinston (1986) menu auction. That is, each group submits a menu of all feasible tariff schedules with the specific transfer it is willing to make to the decision-maker for each of the tariff schedules should that specific schedule be adopted. The government then selects a specific tariff schedule that maximizes its objective function.

In addition to the menu auction lobbying model, G-H assume an underlying model characterized by a specific factor production structure in which labour is the only inter-sector mobile factor; a freely traded Ricardian good which serves as the numeraire; and quasi-linear preferences in which the Ricardian good is the linear good. The government's objective function is taken to be a weighted average of aggregate welfare and political contributions from organised sectors of the economy. Given the underlying economy, the government's maximisation yields trade taxes that satisfy the following modified Ramsey Rule:

$$\frac{t_i}{1+t_i} = \frac{I_i - \alpha_L}{a + \alpha_L} \frac{X_i}{M_i \varepsilon_i} \qquad (1)$$

Where in respect of industry i, t_i is the tariff, X_i is output, M_i is imports, ε_i is the elasticity of demand, I_i is an indicator variable that takes the value of 1 if the industry is organised and 0 for an unorganised industry, α_L is the proportion of the population that is organised and finally a is the weight the government attaches to population welfare relative to political contributions. This equation suggests that industries that are politically organised ($I_i = 1$) will receive positive rates of protection whilst industries that are politically unorganised will receive negative rates of protection.[3]

As a structural framework, this has the additional virtue of associating cross-sectional variance in protection with a relatively small number of (mostly) readily available data.

[3] Note that, unlike early pluralist literature in political science and the literature that grew out of the pioneering work of Findlay and Wellisz (1982), but like the later ('critical') pluralist work such as the Schattschneider (1935) classic on the politics of the Smoot-Hawley tariff, G-H explicitly incorporate asymmetric organization.

That is, we should observe cross-section deviation from free trade in opposite directions for organised and unorganised industries. The size of this deviation is determined by the three key variables: output, imports and the import price elasticity of demand. Firstly, as output increases the benefits to lobbies from protection are higher. Secondly, as import volumes fall the costs of deviation from free trade are lower. Finally, a lower (or more inelastic) industry price elasticity of demand means a lower dead-weight cost to society of deviating from free trade. The implication is that the government will favour organised industries with high levels of output, low levels of imports and price inelastic demand.

Whilst outputs, imports, and elasticity of demand are all, in principle, readily observable, political organization of the industry is a different story.[4] Even under the best of conditions, these data will not be available. The 'best of circumstances' in this case is the US, where there are publicly available data on spending by political action committees (PACs). Thus, Goldberg and Maggi (1999), applying the model to US data, use data on PAC spending to derive a threshold that identifies a sector as politically organised.[5] The most significant application of the G-H model to a developing country is Mitra *et al* (2001) for Turkey, where data from the Turkish Industrialists and Businessmen Association (TUSIAD) to capture political organisation. They generate estimates for two of the key parameters implicit in the model: the weight the government attaches to population welfare relative to political contributions, and the proportion of the population politically organised. The authors conclude that the data supported the model well. We also aim to estimate these parameters. Unfortunately, in the African context, we are neither in the best of circumstances nor even in the circumstances of Mitra *et al* (2001). Interpreting I as an indicator variable for 'access' (to political influence), and assuming that once access is secured groups can tax their members optimally for political purposes, we consider alternatives suggested by the earlier empirical literature on trade policy.

An important early paper by Richard Caves (1976) identified:[6]

[4] It is worth noting that, contrary to the usual Olsonian collective action logic common in economic research, organized sectors in the PfS model are perfectly organized (i.e. they tax specific capital owning households optimally for political activity).

[5] Even here, the data are far from ideal. The model assumes that the resources are spent on trade policy, but the data refer simply to total spending. Thus, exactly the same data would be used to examine, say, agricultural price support or changes in the corporate income tax.

[6] Caves, who was using Canadian data, also considered a 'national policy' model rooted in the details of Canadian tariff history.

- The **Interest Group** model emphasises the factors that affect the capacity of the group to organize for political action. Deriving from Olson's (1965) analysis of collective action problems, this work stresses the need to overcome the free-rider problem implicit in interest group formation.[7] For large interest groups the free-rider problem would be difficult to avoid, inhibiting the resulting power of the lobby. For this reason interest groups with a high degree of geographic and seller concentration would be more successful in capturing rents. Therefore the cross-industry pattern of protection is likely to be positively related to these two variables. In our context, sectors in which the number of workers per firm is large will be taken to indicate sectors in which the collective action problem is most easily overcome.
- The **Adding Machine** model suggests that political influence flows from voting strength. Thus, the greater the number of firms and/or employees in a sector, the more votes available for the politician. In this context, a large sector implies greater access.

Both of these have implications for our access interpretation of the indicator variable (I). In our implementation we will consider several variables implied by the interest group and adding machine models in much the same way as Goldberg and Maggi (1999) use lobbying expenditure to identify organized and unorganized sectors.

Baldwin (1986) also identified two other models with implications for the interpretation of our results:[8]

- The **Status Quo** model. Building on Corden's (1974) conservative social welfare function and Lavergne's (1983) quantitative historical study of the US tariff, this model assumes that politicians are averse to changes in the income distribution. Thus, this model predicts that protection should be related positively to past levels of protection, import penetration and variables related to the ability of workers to adjust, such as the proportion of older unskilled workers.
- The **International Bargaining** model. With roots in Helleiner's (1977) comment on Caves original paper, the notion here is that tariff schedules reflect considerations of international bargaining and relative power.[9] We will explicitly consider a related hypothesis, that **technocratic reforms** supported by international agencies as part of more general liberalizations play a role, and one might see these as the small country equivalent of the international bargaining model.

[7] Depending on the underlying model of the economy, these might be factor-based or industry-based groups. It is conventional in the G-H model to refer to the groups as industry-based, but, of course, the 'industries' and the derived interests are tied to the factors specific to that industry.

[8] Baldwin also discussed a variety of models based on evaluations of relative welfare cost (the 'equity concern model'); relative adjustment cost (the 'adjustment assistance model'); and expected magnitude of change (the 'comparative costs model'). Our data will not permit us to address any of these hypotheses.

[9] In fact, Helleiner's original point was somewhat different: since developing countries at the time did not actively participate in the GATT, tariffs on goods of primary interest to developing countries would be higher than those actively negotiated on by industrial countries.

Interestingly, just as the adding machine and interest group models imply different signs for variables related to industry size, the status quo and technocratic reform models imply different signs for the relationship between sectors with high initial tariffs and degree of reduction. The status quo model predicts that sectors with high initial tariffs will experience smaller proportional cuts than sectors with low initial tariffs. By contrast, and building on research on the relatively robust welfare properties of concertina tariff reforms (e.g. Thomas and Nash, 1991; Falvey, 1994; Neary, 1998; Anderson and Neary, 2007; Kreickemeier and Raimondos-Møller, 2006), the technocratic reform hypothesis predicts that sectors with high initial tariffs will experience larger proportional reductions.

3 Political Economy of Tariffs in Africa

Our application of the G-H model is non-standard as the aim is to explain the relative pattern of protection, using tariffs across sectors, rather than explaining protection/disprotection across sectors. In the data, we have no sectors with import subsidies (disprotection) and can only address relative tariff protection as there are no data on non-tariff barriers (although, has observed above, most of the countries had eliminated most quantitative import restrictions). The Ramsey Rule is rewritten in the following form:

$$\frac{t_{it}}{1+t_{it}} = \pi_{it} + \gamma \frac{X_{it}}{M_{it}\varepsilon_{it}} + \delta I_i \frac{X_{it}}{M_{it}\varepsilon_{it}} + \xi_{it} \qquad (2)$$

Equation (2) is estimated using OLS to estimate the coefficients γ and δ. The second term on the right hand side includes the political organisation indicator variable. Because $a \in [0,\infty)$ and $\alpha_L \in [0,1]$ δ should be positive and γ should be negative, but their sum should be positive. This is implied so that protection is positive for organised sectors and negative for unorganised sectors. Negative tariffs (import subsidies) are not typically observed, so it is possible that γ is positive (in our data it is always non-negative). In assessing the importance of political organisation, we require that $\delta > 0$ (and significant) as this would be sufficient to ensure that organised sectors have higher tariffs ($\gamma + \delta$) than unorganised sectors (γ). Furthermore, from (1) and (2):

$$\hat{a} = \frac{1+\hat{\gamma}}{\hat{\delta}}, \qquad \hat{\beta} = \frac{1+\hat{\gamma}}{1+\hat{\gamma}+\hat{\delta}}, \quad \hat{\alpha}_L = -\frac{\hat{\gamma}}{\hat{\delta}}$$

It is thus possible to derive estimates for: a, the weight the government attaches to welfare *relative to* lobbies (contributions); α_L, the proportion of the population politically organised;[10] and β, the weight that the government attaches to population welfare (which is distinct from the relative weight, *a*).

The major difficulty in applying the G-H model empirically is how to identify whether an industry is politically organised. As we have no data on business associations, such as used by Mitra *et al* (2001), three proxy measures of political organisation are considered.

The Number of Establishments The first proxy is based on the number of establishments within each sector (unfortunately we have no data on industrial concentration). According to Olsen (1965), *ceteris paribus* the more establishments in a sector the greater the resources devoted to lobbying and so the greater the potential for political influence, although inefficient lobbying may result as establishment members may be prone to free riding (which serves to undermine lobbying efforts). Although the collective action problem suggests that sectors with more establishments may be less effective in lobbying, assuming a correlation between number of establishments and total sector size, we favour the premise that sectors with more establishments will have more political influence over policy makers in African countries.[11] For each country a threshold is set based on the mean, median and upper quartile of the distribution; sectors are classified as politically organised if the number of establishments is greater than this threshold level.

The Number of Employees Following the same line of argument for the number of establishments, an alternative measure of sector size (as a proxy for political influence) is employees per sector. The argument is that the larger the number of employees the more likely it is that the sector has political influence on policy makers. Again a threshold is set for each country based on the mean, median and upper quartile. If the number of employees in a sector is above this threshold the sector is classified as politically organised. To the extent that the number of employees is correlated with the number of unskilled employees, this may also be a proxy for the 'social justice' model mentioned above.

The Ratio of Employees to Establishments The third measure takes advantage of data on establishments and employment. The greater the ratio of employees to establishments the more likely it is that the sector includes large firms and therefore political influence (and the potential for collective lobbying) is greater. Again thresholds are set based on the average, median and upper quartile. If the ratio of employees to establishments is greater than these threshold limits the sector is classified as politically organised.

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[10] As we do not observe negative protection the formula for calculating α_L is $\widehat{\alpha}_L = \frac{\widehat{\gamma}}{\widehat{\delta}}$

[11] This is not implausible as the data largely omits microenterprises and one could expect sectors with more formal enterprises to be relatively more influential.

The data are obtained from the World Bank Trade and Production Database and are available for Kenya, Tunisia, Egypt, Morocco and Tanzania.[12] This dataset uses the ISIC 3-digit manufacturing classification which includes approximately 27 sectors between 1992 and 2002 (this varies for each country, as discussed below). For each product line data are available on output, imports and applied tariffs, and for the measures used to classify political organisation. The import demand elasticities are taken from Kee *et al* (2005), but for Egypt, Kenya and Tanzania these are supplemented with our own import demand elasticity estimates (these are from HS classifications, related to the ISIC sectors using the concordance in Table A1).[13]

For each country, tariffs do not change annually. For example in Tanzania we have different tariff observations in 1995 and 1997 (the 1995 tariffs were set in 1994, and tariffs changed again in 2000, but the trade data covers 1995-97). It is therefore assumed that tariffs in 1996 are the same as those in 1995. As the focus is on the cross-industry pattern of protection, not liberalisation, for each of these years, instead of using annual observations as a dimension in our panel we use 'tariff time' (periods during which tariffs are unchanged). Thus $t = 0$ is defined as the years when initial tariffs prevail (1995-96 in Tanzania), $t = 1$ is the years from when tariffs changed (1997 in Tanzania). Assuming there are data for 28 sectors for each period of tariff time the constructed dataset will include $28 \times t$ observations. In reality not all of the 28 sectors are available and, as the number of 'tariff times' differ, total observations are different for each country.[14] Although Tunisia and Morocco did not liberalise their tariffs over the period, in fact to a certain degree tariffs increased, this should not have any effect on the results as the G-H model is explaining the cross-industry pattern of protection, not trade liberalisation.

Where possible we average the data on imports and output over tariff periods. As we are concerned with the effect of imports on the pattern of tariffs, imports are averaged over the tariff period preceding a change. For example, for Tanzania, imports for 1997 (the second unit of 'tariff time') is the average level of imports per sector over 1996 and 1997, and similarly for output. The import elasticity of demand is assumed to be time-invariant and constant for each unit of 'tariff time'. The data used to create the political

[12] URL:http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:20098489~menuPK:167374~pagePK:148956~piPK:216618~theSitePK:239071,00.html

[13] Details available in Jones (2008).

[14] The following sectors are not available for each country: Tanzania 354, 384, 390; Egypt 322, 324; Morocco 324, 353, 354; Kenya 324, 354, 371, 372; Tunisia 323, 324, 331, 332, 341, 342, 353, 354, 372, 381, 385.

organisation variables uses the data on establishments and the number employees for the relevant tariff period. For some countries there are only two units of 'tariff time', this seriously reduces the data available for estimation. The countries covered differ by income level and the share of manufacturing in the economy, although all except Tanzania have relatively developed, by African standards, manufacturing sectors. We begin with the two SSA countries and then consider the three, relatively developed, North African countries.

Table 1: Political Economy Model Estimates for Kenya

Panel A

Measure (mean)	γ	δ	Constant	R^2
Establishments	0.0001**	0.004**	0.578***	0.16
se	0.00004	0.002	0.032	
Employees	0.0001**	0.001	0.599***	0.09
se	0.00004	0.004	0.033	
Ratio	0.0024***	-0.002**	0.575***	0.21
se	0.001	0.001	0.031	

Panel B

Measure (mean)	γ	δ	Constant	R^2
Establishments	0.0001**	0.004**	0.577***	0.17
se	0.00004	0.002	0.032	
Employees	0.0001**	0.002	0.598***	0.09
se	0.00005	0.003	0.033	
Ratio	0.0009*	-0.0008*	0.591***	0.14
se	0.0005	0.0005	0.031	

Panel C

Measure (mean)	Elasticity 1			Elasticity 2		
	a	β	α_L	a	β	α_L
Establishments	230	0.996	0.022	180	0.994	0.018
Employees	695	0.999	0.064	568	1.002	0.052
Ratio	-436	1.002	-1.043	-1213	1.001	-1.109

Notes: There are 48 observations for each model, comprising 24 Sectors in two tariff periods (which are 1991, 1992-00). Standard errors (se) given below coefficient estimates; *** indicates significant at the 1 per cent level, ** significance at the 5 per cent level, and * at the 10 per cent level. Panel A and Elasticity 1 in Panel C based on Kee *et al* (2005) estimates of import demand elasticities; Panel B and Elasticity 2 in Panel C based on own estimates.

Kenya

Table 1 reports the results for Kenya with the mean threshold for the political organisation measures (the other thresholds yield broadly similar results; full results are reported in Appendix Table A2). Panel A uses the elasticities estimated by Kee *et al* (2005). Remarkably similar results are obtained using our estimates of elasticities (panel

B). The R^2 values across each specification (for different measures of political organisation) lie in the range 0.09-0.22 suggesting that only a small part of the cross-industry variation in tariffs can be explained by the variables included to represent the G-H model.

The coefficient estimate of γ is statistically significant (for each specification, and almost identical in magnitude for the establishments and employees measures for all threshold criteria), but has a positive sign. This suggests that politically unorganised sectors receive positive rates of protection, contradicting the prediction of the strict G-H model (they should receive negative rates of protection), but is to be expected as all observations have positive tariffs. The estimates for δ are also statistically significant for each specification and tend to be larger than γ. This suggests that organised sectors receive greater levels of protection compared to unorganised sectors, as we would expect. The exception is when political organisation is measured by the ratio of employees to establishments, where the coefficient estimate for δ is negative and significant (for each threshold), although slightly lower in absolute value than γ in these regressions. This 'firm size' measure does not support the prediction that organised sectors receive positive rates of protection, suggesting that sector size may be politically more relevant than firm size, or that the ratio is a poor proxy for political organisation.

The parameter estimates of *a*, β and α_L for Kenya are reported in Table 1, panel C. When political organisation is measured by the ratio we get perverse results, due to the negative coefficient estimate of δ for each threshold. For the other measures of political organisation the results are more plausible (and are similar whichever elasticity estimates are used). The parameter *a,* the weight the government attaches to welfare relative to political contributions, is very high for each measure of political organisation; for the most consistent estimates using establishments the value is around 200.[15] The estimate of β, the weight attached to population welfare in the government's objective function, is almost unity (consistent with the very high value for *a*); this is easier to interpret as a value of 1 implies all weight is attached to the population. The estimate for α_L - the proportion of the population politically organised - tends to be very small for each measure, between two and six per cent of the

[15] Mitra *et al* (2001) estimate *a* at 76 in 1983 and 104 in 1990.

population. With this low estimate it is not surprising that the government appears to place such a high weight on 'population' welfare.

Tanzania

The results for Tanzania based on median thresholds are reported in Table 2 (the mean thresholds give similar results, full details in Appendix Table A3), using the Kee *et al* (2005) elasticities in Panel A and our own in Panel B. Only the 'establishments' measure provides consistent results: the estimates of γ are statistically significant, albeit positive; the estimates of δ with this measure are significant and positive using the mean and median threshold. As estimated δ is greater than that of γ, organised sectors (as measured by size) receive more protection than unorganised sectors.

Table 2: Political Economy Model Estimates for Tanzania

Panel A

Measure (median)	γ	δ	Constant	R^2
Establishments	0.0003***	0.0204**	0.386***	0.23
se	0.0001	0.008	0.023	
Employees	0.019	-0.019	0.403***	0.15
se	0.016	-0.016	0.023	
Ratio	0.018	-0.018	0.399***	0.16
se	0.012	-0.012	0.023	

Panel B

Measure (median)	γ	δ	Constant	R^2
Establishments	0.0002***	0.033***	0.381***	0.26
se	0.0001	0.01	0.023	
Employees	0.01	-0.02	0.406***	0.13
se	0.02	-0.03	0.023	
Ratio	0.01	-0.01	0.404***	0.14
se	0.01	-0.02	0.024	

Panel C

Measure (median)	Elasticity 1			Elasticity 2		
	a	β	α_L	a	β	α_L
Establishments	49.03	0.98	0.01	30.13	0.97	0.01
Employees	-53.93	1.02	-1.02	-61.24	1.02	-0.64
Ratio	-57.51	1.02	-1.02	-69.14	1.01	-0.64

Notes: As for Table 1. There are 50 observations, comprising 25 Sectors in two tariff periods (1995 and 1996-97).

The derived G-H parameters are shown in panel C; the results for a and α_L are not robust except for the establishments measure, although β is fairly consistently close to unity. The 'preferred' parameter estimates are those based on the significant and

consistent coefficient estimates (establishment measure and median threshold). The government attaches almost all weight to population welfare, with an estimate of 0.98 for β. The proportion of the population politically organised is estimated at only one per cent. Although the results are generally weaker than for Kenya, the general implication is similar: population welfare appears most important to the government and sector size rather than firm size appears to influence relative rates of protection.

Table 3: Political Economy Model Estimates for Egypt

Panel A

Threshold	Measure	γ	δ	Constant	R^2
Median	Establishments	0.009***	-0.004	0.721*	0.19
	se	0.003	-0.033	0.37	
	Employees	0.007***	0.111***	0.248***	0.97
	se	0.001	0.003	0.067	
Quartile	Establishments	0.009***	-0.022	0.743*	0.19
	se	0.003	-0.1	0.38	
	Employees	0.009***	-0.028	0.743*	0.19
	se	0.003	-0.11	0.37	
	Ratio	0.007***	0.046***	0.311	0.48
	se	0.002	0.009	0.29	

Panel B

Threshold	Measure	Parameter Estimates		
		a	β	α_L
Median	Establishments	-84.07	1.012	-0.740
	Employees	6.75	0.871	0.047
	Ratio	86.99	0.989	0.043
Quartile	Establishments	-36.28	1.028	-0.318
	Employees	-28.25	1.037	-0.248
	Ratio	16.95	0.944	0.117

Notes: As for Table 1; all estimates based on 'elasticity 2' (own estimates). There are 52 observations, comprising 26 Sectors in 2 tariff periods (which are 1991 and 1992-98).

Egypt

The results for Egypt based on our estimated elasticities are presented in Table 3; the elasticities estimated by Kee *et al* (2005) yielded insignificant estimates (full details in Appendix Table A4). Table 2 reports results for all measures and thresholds yielding significant coefficient estimates. These are all positive for γ, suggesting that unorganised sectors receive positive rates of protection. In the two cases when the estimate of δ is significant (employees/median and ratio/quartile) it is positive, and organised sectors receive greater protection than unorganised sectors. Using these estimates, the G-H parameter estimate of a is 7-17, for β it is 0.9 and for α_L it is 5-

12% of population organised (Panel C). Although the weights (a and β) are lower, the qualitative results are similar to Kenya and Tanzania: the government values welfare more than political access (as measured) and a small proportion of the population is politically organised. As ratio provides significant estimates, there is some evidence that firm size is important; sectors with larger firms tend to get higher protection.

Morocco

The results for Morocco are reported in Table 4 for the mean and quartile thresholds (full results are in Appendix Table A5). There is no evidence that organised sectors receive greater levels of protection compared to unorganised sectors; only for the ratio measure are the coefficient estimates significant, but δ has a negative sign. There is also little evidence that politically unorganised sectors receive positive protection; only two measures of political organisation provide statistically significant and positive estimates. As coefficient estimates are only significant for two specifications, and in both cases δ is negative, the G-H parameters are not estimated for Morocco.

Table 4: Political Economy Model Estimates for Morocco

Threshold/Measure		γ	δ	Constant	R^2
Mean	Establishments	0.015	-0.008	0.765***	0.04
	se	0.012	0.012	0.053	
	Employees	0.018	-0.012	0.754***	0.05
	se	0.012	0.012	0.055	
	Ratio	0.012***	-0.011*	0.779***	0.07
	se	0.004	0.006	0.048	
Quartile	Establishments	0.016	-0.01	0.759***	0.04
	se	0.012	0.01	0.055	
	Employees	0.018	-0.01	0.755***	0.05
	se	0.012	0.01	0.055	
	Ratio	0.012***	-0.01*	0.778***	0.07
	se	0.004	0.006	0.048	

Notes: As for Table 6.1 (no elasticity estimates available from Chapter 3). No parameter estimates as all coefficient estimates are insignificant or inconsistent. There are 100 observations, comprising 25 Sectors in 4 tariff periods (which are 1992, 1993-97, 1998-00 and 2001)

Tunisia

The results for Tunisia are reported in Table 5, Panel A for coefficients and Panel B for derived parameters, using the mean threshold (the median and quartile thresholds give poor results, see Appendix Table A6). There is some evidence that organised sectors receive higher protection; but results are less consistent than for Kenya (for no measure

are γ and δ both significant). Insofar as any inference can be drawn, sector size (employees) appears to influence relative protection, as does firm size (as measured by ratio). The derived parameter estimates (Panel B) are inconsistent for the employees measure ($\delta < 0$) and, although plausible for the other measures, are based on at least some insignificant coefficient estimates. The results for β are fairly consistent and similar to all other countries, again suggesting that, if anything, it is welfare (interpreted in some way by government reflecting sector size) not lobbies that influence the pattern of protection. The estimated *a* is fairly large, and for the establishments measure is identical to the estimate of Mitra *et al* (2001) of 104 in 1990 for Turkey, and the fact that it is much lower than for Kenya is consistent with the proportion of the population organised appearing much higher (at almost 30%).

Table 5: Political Economy Model Estimates for Tunisia

Panel A

Measure (mean)	γ	δ	Constant	R^2
Establishments	0.0028	0.0097*	0.625***	0.10
se	0.0019	0.005	0.021	
Employees	0.0061**	-0.005	0.627***	0.08
se	0.003	0.003	0.021	
Ratio	0.0034*	0.0034	0.629***	0.05
se	0.002	0.006	0.022	

Panel B

Measure (mean)	Parameter Estimates		
	a	β	α_L
Establishments	103.91	0.9905	0.2860
Employees	-210.93	1.0048	-1.2872
Ratio	291.65	0.9966	0.9593

Notes: As for Table 1 (no own elasticity estimates). There are 68 observations, comprising 17 Sectors in 4 tariff periods (which are 1991, 1992-95, 1996-98 and 1999-02)

Interpretation

In general the G-H model does not fit the data: one or both of the coefficient estimates are insignificant in most specifications for most countries, and/or organised sectors were estimated to receive negative protection (contrary to the model); indeed it was statistically invalid to estimate the model parameters for Morocco. There is no empirical support for the strict G-H model, but this is unsurprising: firms in Africa are not organised in the manner posited (at a sector level), they do not make political

contributions to parties and governments are not viewed as weighting ‘population’ (as broadly defined in G-H) welfare. The lack of evidence that unorganised sectors receive negative rates of protection is simply be because the data has positive protection for all sectors (i.e. there are no negative tariffs for the data to predict).

Rejecting the strict G-H model does not imply that the political economy variables, specifically a sector’s political access (organisation), do not influence the cross-industry pattern of protection. Although we only have proxy measures, there is evidence that organised sectors receive higher protection, insofar as a proxy for sector size can be interpreted as a measure of political organisation. Perhaps a more appropriate interpretation, consistent with alternative approaches such as the ‘adding up’ model, is that a measure of sector size does appear to be associated with relative protection. One result does appear with the greatest frequency: larger sectors (measured by number of establishments and/or employees) benefit from higher tariffs. However, the firm size proxy, average employees per establishment, is rarely significant, suggesting at least that there is no evidence that sectors with larger firms are better able to lobby for protection (the possible exception is Egypt). Firm size does not influence protection, suggesting that governments do not attach weight to firm lobbying (at least in setting relative tariffs), but population interpreted as sector size (i.e. the population of producers and/or employees) does appear to affect protection.

For the specifications that lend some support to the G-H model it was possible to derive estimates of the model parameters for four countries (Kenya, Tanzania, Egypt and Tunisia). These results are quite consistent where available: governments appear to attach the greatest weight to ‘population’ welfare, either absolutely or relative to political contributions, consistent with only a small proportion of the population appearing to be politically organised (given that all sectors receive protection). As the significant measures of organisation tend to be measures of sector size, the implication is that relatively larger sectors are more protected. Insofar as domestic production capacity and employment (largely of unskilled labour) should be correlated with sector size, the population the government favours is that of producers, i.e. it is producer (or labour) welfare that is weighted rather than consumer welfare. This interpretation is consistent with the ‘adding machine’ model.

4 Political Economy and Tariff Changes

We now consider if the variables we have available can help to explain (i.e. are determinants of) tariff changes, usually a slightly different sample of Algeria, Egypt, Ethiopia, Kenya, Tanzania and Uganda. The data are classified using the Harmonised System (HS) and cover tariffs, imports and our estimated elasticities for up to 94 sectors (Jones, 2008). The data on tariffs and imports are calculated as percentage changes over the relevant tariff period ('tariff time' as defined above). The change in tariffs is regressed on the change in imports, the elasticity of demand for imports, the initial level of tariffs and a manufacturing dummy variable (i.e. a dummy equal to 1 if the sector is manufacturing, and zero otherwise). These explanatory variables are used to proxy for political economy characteristics: change in imports is a proxy for import penetration (which we cannot measure directly due to the unavailability of output data for each of the sectors); elasticities are suggested by G-H; lagged tariffs are suggested by the 'Status Quo' model; the manufacturing dummy helps identify if relative protection differs between manufacturing (firm lobbies) and non-manufacturing (mostly agriculture). As an added check we also perform a sensitivity analysis measuring the change in sector imports relative to the mean change.

Empirical Specification

There is no formal political economy model of tariff liberalisation so we adopt an *ad hoc* approach, similar to Caves (1976), of the following form:

$$\Delta\tau_{it} = \upsilon_{it} + \phi\Delta M_{it} + \omega\varepsilon_{it} + \lambda D_{it} + \theta\tau_{i0} + \xi_{it} \qquad (3)$$

where the subscript *i* represents sectors and *t* represents the time period. We consider the percentage change in τ (tariffs, which will be negative due to liberalisation) and *M* (imports); ε is the elasticity of import demand for each sector, *D* is a dummy variable which equals one if a sector is classified as manufacturing and zero if a sector is classified as agricultural and τ_{i0} is the initial level of tariffs. Our null hypotheses for the parameter estimates for each variable are as follows:

The Change in Imports: The expected the sign of ϕ is ambiguous. An import penetration argument suggests that the greater the increase in imports prior to tariff reform the lower the expected reduction in tariffs, i.e. $\phi > 0$. Large increases in imports into a sector would send a worrying signal to the tariff-setting authority which may have a preference to protect domestic firms. However, if rising imports imply no domestic sector to protect, tariffs can be reduced more, i.e. $\phi < 0$ (in a revenue neutral manner).

The Import Elasticity of Demand: Given the Ramsey Rule, the more elastic is import demand (higher ε) the lower the tariff is likely to be and the less the concern regarding tariff reductions. If the government is more concerned about higher tariffs on sectors that face inelastic demand because of the distributional consequences, sectors facing elastic demand should see greater liberalisation of tariffs, i.e. $\omega < 0$.

The Manufacturing Dummy Variable: The expected sign of λ is ambiguous. Industrial concentration and infant industry arguments suggest that manufacturing sectors receive more protection than agricultural sectors, i.e. $\lambda > 0$ (lower tariff reduction). The tariff-setting authorities will wish to protect their manufacturing base from exposure to import competition. On the other hand, agriculture sectors may be the major source of export earnings and employ more unskilled labour, suggesting high tariffs (and low imports) to protect the export products, i.e. $\lambda < 0$.

The Initial Level of Tariffs: If we assume technocratic reform, such as meeting WTO obligations, the higher the initial tariff the greater the proportionate reduction in tariffs, $\theta < 0$ (because the change in tariffs is negative), or the initial tariff variable is insignificant. However, if political economy factors act so as to maintain the relative pattern of protection, and high initial tariffs indicate lobbies for protection, tariffs may proportionately be reduced least where initial tariffs are greatest, $\theta > 0$.

Because tariffs only change once or twice throughout the period investigated we again take advantage of the notion of 'tariff time' used above. For example, Tanzania altered its tariff structure in 1997, 2000 and 2003 (for the period covered in the data we are here using). We have three changes in tariffs for each industry; this means that the dimensions of the panel will be 94×3 observations. Because the import data is far more variable and available for each year we smooth the data by averaging the change in imports in the years prior to and including the year the change in tariffs took place. Table 6 summarises the data available for each country. The manufacturing dummy is constructed by assigning the value of 1 to industries that begin with codes 24 to 96, and 0 for codes 01-23.

Table 6: Data Availability for Tariff Changes

Country	Period	Tariff time	No of Sectors	Obs	Dates Liberalised
Algeria	1992-02	3	94	282	1997, 2001, 2002
Tanzania	1995-03	3	94	282	1997, 2000, 2003
Uganda	1994-00	1	94	94	2000
Ethiopia	1997-01	1	93	94	2001
Kenya	1997-00	1	94	94	2000
Egypt	1994-98	1	94	94	1998

Table 7: Descriptive Statistics for Tariff Changes

Statistics Across Sectors	**Algeria**	**Egypt**	**Uganda**	**Ethiopia**	**Kenya**	**Tanzania**
Average Initial level of Tariffs	26.99	47.63	19.19	32.55	36.17	21.20
Average Final level of Tariffs	20.67	34.45	10.78	20.86	17.10	15.11
% Reduction in Average Tariffs	-23.44	-27.67	-43.84	-35.92	-52.71	-28.71
Average % Change in Imports	68.54	24.32	234.75	184.85	0.39	38.33
Average Initial level of Manufacturing Tariffs	26.72	31.39	17.45	29.52	36.17	19.93
Average Final Level of Manufacturing Tariffs	19.78	23.57	10.17	19.93	17.53	13.99
% Change in Average Manufacturing Tariffs	-25.97	-24.92	-41.73	-32.49	-51.55	-29.81
Average % Change in Manufacturing Imports	62.65	32.41	270.98	126.53	0.60	39.13
Average Initial level of Agriculture Tariffs	27.78	94.97	24.26	41.27	39.71	24.88
Average Final Level of Agriculture Tariffs	23.22	66.18	12.55	23.53	15.88	18.38
% Change in Average Agricultural Tariffs	-16.44	-30.32	-48.28	-42.98	-60.02	-26.15
Average % change in Agricultural Imports	85.45	0.74	129.10	352.51	-0.22	36.01

Table 7 provides descriptive statistics of the data used across sectors for each country. For example, the average (across sectors) initial tariff for Algeria is 27 per cent compared with 21 per cent post liberalisation; this equates to a reduction of 23 per cent. This tariff reduction in Algeria 'follows' an average percentage increase in imports (across sectors) of 69 per cent (in the period prior to the change in tariffs). There is no evident consistent relationship between the change in imports and the change in tariffs. These aggregate figures may however hide cross-sector differences, which we explore in the econometric analysis.

Table 7 also provides statistics for manufacturing and agriculture separately. To the extent that manufacturing sectors in African economies tend to be more concentrated they may be able to overcome the collective action problem of forming an effective lobby (although the results in the previous section offer no support for this). For this reason we may expect lower reductions in tariffs for manufacturing sectors. The descriptive statistics provide mixed evidence: the percentage change in average manufacturing tariffs for Egypt, Uganda, Ethiopia and Kenya are lower than the percentage change in average agricultural tariffs. However the opposite is the case for Algeria and Tanzania.

The econometric results of estimating (3) for each country are reported in Table 8. Almost all of the coefficient estimates are statistically insignificant (except for the coefficient for the initial level of tariffs) suggesting that the political economy variables have had no evident effect on tariff liberalisation. The only country that does appear to show a partial relationship between the political economy variables and tariff liberalisation is Ethiopia. The coefficient ϕ is positive and significant but is fairly small. This suggests that increased imports are associated with lower tariff liberalisation. In addition the parameter λ which is the coefficient associated with the manufacturing dummy variable is positive at 0.09. This suggests that manufacturing industries receive greater protection compared to the agricultural industries. The most significant result is the coefficient estimate for the initial level of tariffs. For Algeria, Uganda, Ethiopia and Tanzania the estimate is statistically significant and suggests that the higher the initial level of tariffs the greater the proportionate reduction in tariffs. This is consistent with standard WTO principles (reduce the highest tariffs by the most and/or eliminate

redundant tariffs) and suggests technocratic reform rather than reforms guided by political economy (status quo protection) influences.

Table 8: Estimates for Tariff Changes

Country	Algeria	Egypt	Uganda	Ethiopia	Kenya	Tanzania
Coefficient	$\Delta\tau$	$\Delta\tau$	$\Delta\tau$	$\Delta\tau$	$\Delta\tau$	$\Delta\tau$
ΔM, ϕ	-0.0003	0.018	-0.0001	0.004**	-0.049**	0.011
	0.0005	0.017	0.0016	0.002	0.021	0.022
Elasticity ω	-0.009	0.006	-0.015	0.003	0.145*	0.015
	0.008	0.009	0.014	0.01	0.087	0.034
D (Man =1) λ	-0.05	0.018	-0.055	0.093**	0.005	-0.003
	0.036	0.038	0.063	0.043	0.0034	0.13
Initial Tariffs θ	-0.008***	-0.0001	-0.015***	-0.0047***	-0.239	-0.017***
	0.001	0.0001	0.0033	0.001	0.2	0.0055
Constant	0.25***	-0.195***	-0.084	-0.215***	-0.460**	0.399**
	0.041	0.037	0.095	0.057	0.18	0.18
Observations	279	94	94	93	94	282
R^2	0.24	0.05	0.19	0.35	0.10	0.04

Notes: *** indicates significant at the 1 percent level; ** indicates significance at the 5 percent level.

As a further test we estimate the following model:

$$\Delta\tau_{it}^{*} = \upsilon_{it} + \phi\Delta M_{it}^{*} + \omega\varepsilon_{it} + \lambda D_{it} + \theta\tau_{i0} + \xi_{it} \qquad (4)$$

Where:

$$\Delta\tau_{it}^{*} = \frac{\%\Delta\tau_{it}}{\%\Delta\bar{\tau}_{t}} \quad \text{and} \quad \Delta M_{it}^{*} = \frac{\%\Delta M_{it}}{\%\Delta\bar{M}_{t}}$$

The dependent variable is the ratio of the percentage change in sector tariffs to the percentage change in average tariffs, i.e. we consider the change in sector tariff relative to the average change. The independent variables are: the ratio of the percentage change in sector imports divided by the percentage change in average imports; the import demand elasticity; the manufacturing dummy variable; and the initial level of tariffs. The data is constructed for units of tariff time, so the data on imports is smoothed over the years prior to and including the year of liberalisation. For this model the dependent variable will be positive because it is the ratio of two negative numbers (coefficient estimates interpreted in the opposite way to Table 8).

Table 9 reports the results: the political economy variables are again statistically insignificant for the majority of countries. The exception is again Ethiopia, which has

significant estimates for the manufacturing dummy and the ratio for change in sector imports relative to change in average imports. It appears that political economy factors have had a minor impact on the liberalisation of tariffs. In addition, the coefficient estimates for the initial level of tariffs is positive and significant for four out of the six countries; the higher the initial level of tariffs the greater the proportionate reduction in tariffs. It would appear that this sort of technocratic reform is having a greater impact on liberalisation than political economy factors.

Table 9: Influences on Tariff Changes Relative to the Mean Change

Country	Algeria	Egypt	Uganda	Ethiopia	Kenya	Tanzania
Coefficient	$\Delta\tau^*$	Δt^*	Δt^*	Δt^*	Δt^*	Δt^*
ΔM^*, ϕ	0.0001	-0.0004	0	-0.00001**	-0.01	-0.0002
	0.0001	0.0004	0.00006	0.000004	0.012	0.0005
Elasticity ω	0.092	-0.020	0.034	-0.001	0.02	0.068
	0.13	0.031	0.033	0.041	0.02	0.17
D (Man =1) λ	1.169*	-0.066	0.125	-0.266**	-0.15*	-0.69
	0.62	0.14	0.14	0.12	0.09	0.64
Initial Tariffs θ	0.128***	0.0005	0.034***	0.0128***	0.008**	-0.16***
	0.016	0.0003	0.007	0.003	0.003	0.03
Constant	-4.523***	0.704***	0.19	0.619***	0.81**	5.63***
	0.71	0.13	0.22	0.18	0.16	0.86
Observations	279	94	94	93	94	282
R^2	0.2	0.05	0.2	0.35	0.13	0.12

Notes: *** indicates significant at the 1 percent level; ** indicates significance at the 5 percent level.

5 Technocratic Tariff Reforms?

African countries have been encouraged to liberalise tariffs by external institutions, specifically the structural adjustment programmes promoted by the World Bank, and to a lesser extent through commitments under the WTO. Table 10 provides descriptive statistics for the six countries used in the previous section plus Morocco (data for Tunisia are unavailable). Tariffs are classified at the 8-digit level and taken from the COMTRADE database.[16] For each country we report: (1) the number of tariff lines, (2) the percentage of tariff lines equal to zero, (3) the average tariff, (4) the median tariff (5) the modal tariff, (6) the standard deviation, (7) the level of skewness, (8) the level of kurtosis, and (9) the coefficient of variation.

[16] For Morocco the data for 2000, 2001 and 2002 is constructed from a 10-digit classification.

Table 10: Descriptive Statistics for Countries in the Sample

Country/Stat	Tariff Lines	% of Tariffs = 0	Average Tariff	Median Tariff	Mode Tariff	SD	Skew	Kurt	CV
Algeria 1993	6087	1.46	24.80	15	15	19.58	0.71	-0.82	0.79
Algeria 1997	6238	1.64	24.16	15	45	16.74	0.21	-1.60	0.69
Algeria 2001	5911	1.76	22.13	15	40	14.64	0.12	-1.60	0.66
Egypt 1994	6045	0.26	33.82	20	10	128.59	21.39	480.74	3.80
Egypt 1998	6069	0.20	28.05	20	10	130.56	21.33	472.56	4.66
Egypt 2002	6686	0.52	20.48	15	10	17.82	7.16	192.37	0.87
Ethiopia 1995	5309	2.58	28.74	20	5	23.88	0.83	-0.48	0.83
Ethiopia 2001	5416	3.10	18.81	15	5	13.34	0.45	-1.22	0.71
Kenya 1995	5761	3.40	35.12	31	50	13.33	-0.54	-0.14	0.38
Kenya 2000	5924	3.66	17.71	15	15	11.46	0.75	-0.35	0.65
Kenya 2001	5928	6.87	19.26	15	15	12.99	0.33	-0.66	0.67
Morocco 1993	8467	0.86	24.51	23	40	13.10	-0.15	-1.22	0.53
Morocco 1997	9114	0.03	23.98	25	35	30.17	6.66	59.03	1.26
Morocco 2000*	16639	0.08	35.68	40	50	31.19	5.50	45.75	0.87
Morocco 2001*	16593	0.06	34.04	40	50	24.85	4.89	53.24	0.73
Morocco 2002 *	17379	0.06	33.63	40	50	24.36	4.59	49.38	0.72
Tanzania 1994	5798	9.95	19.47	20	20	12.20	0.53	-0.02	0.63
Tanzania 1997	7499	15.48	22.12	30	30	13.88	-0.37	-1.20	0.63
Tanzania 2000	5286	2.36	16.19	20	25	9.00	-0.37	-1.63	0.56
Uganda 1994	5306	4.26	17.07	10	10	9.06	0.36	-0.67	0.53
Uganda 2000	5271	16.13	8.94	7	7	5.36	-0.22	-1.11	0.60

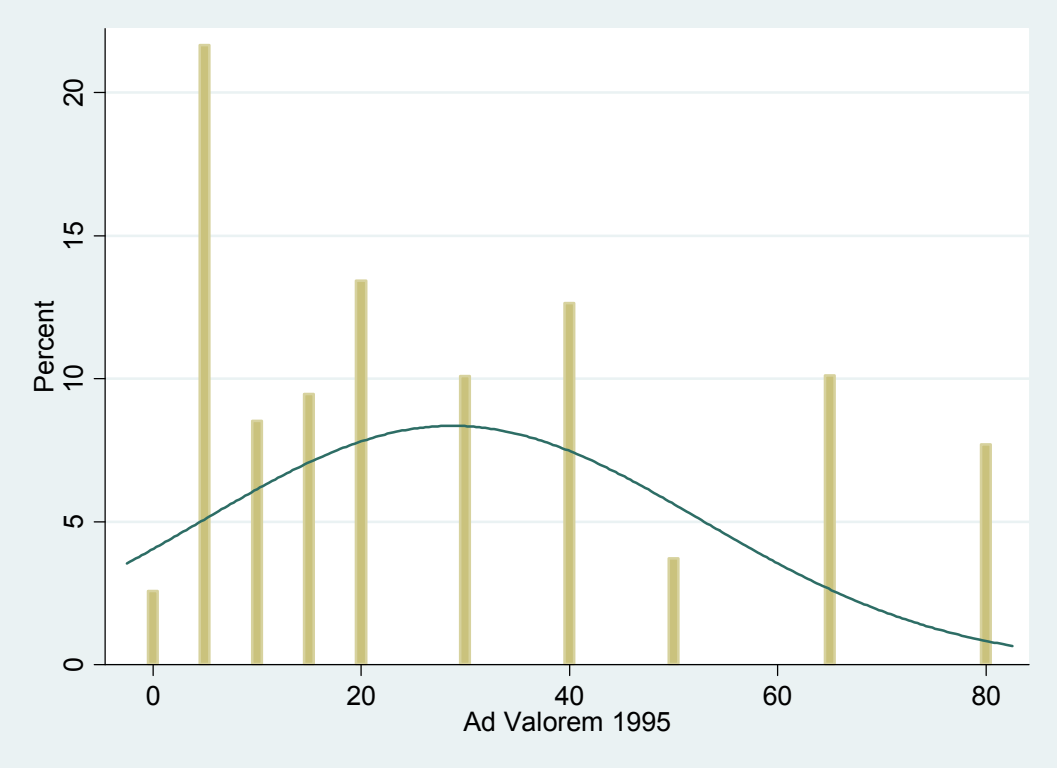
Notes: Morocco changed its classification from 8 to 10 digits in 2000.

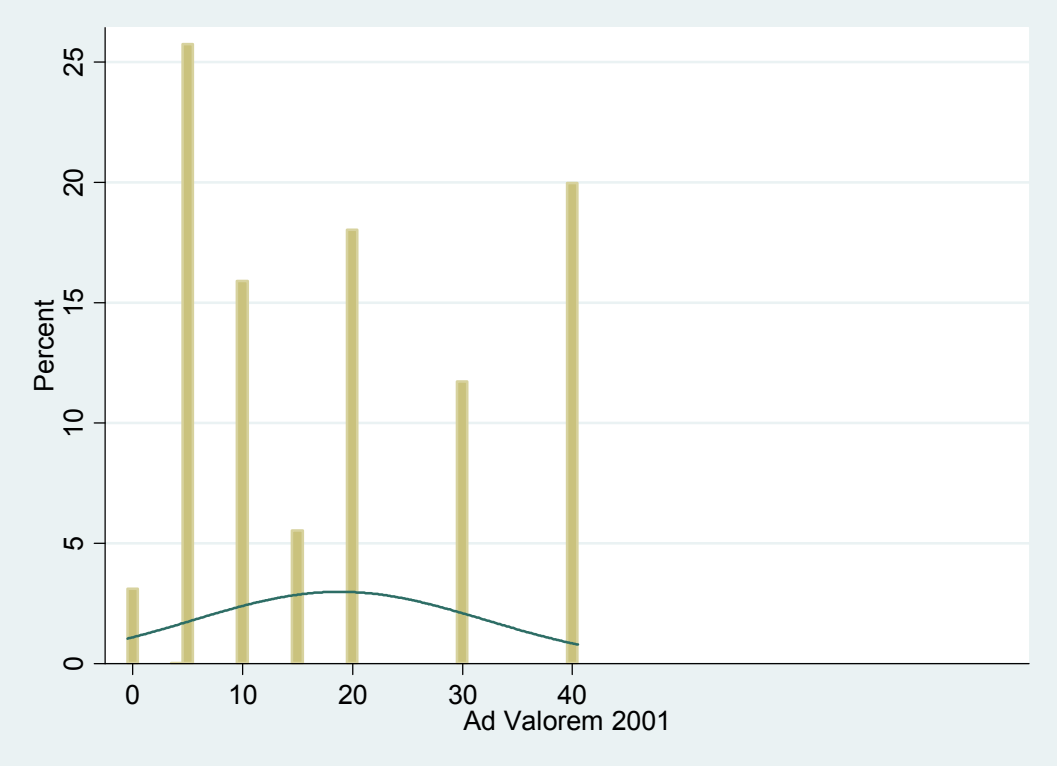
The mean tariff, median tariff and mode tariff are measures of central tendency. In comparison with one another they give a general feel for the distribution and allow inferences to be made. For example, if the modal value is greater (lower) than the mean there is a greater number of large (small) tariff values present in the tariff structure. If the distance between the mode and the mean converges over time the distribution will become thinner – there will be less variability across the tariff structure. In practice this variability is measured by the standard deviation. For a given mean tariff, a high standard deviation suggests that there are sub-sectors that face very different tariffs. If the standard deviation falls, for a given mean this variability is reduced.

To provide evidence that technocratic policy has had more of a decisive impact on trade liberalisation compared to the political economy factors suggested by the literature we take advantage of the skewness, kurtosis and coefficient of variation statistics. The skewness statistic tells us about the asymmetry of the distribution of tariffs for each product line around the mean; if the distribution is skewed to the right it is positive, to the left it is negative, or if equal to zero it is symmetrical around the mean. The kurtosis statistic tells us about the "peakedness" of the probability distribution of tariffs for each product; if it is positive (leptokurtic) there is a greater likelihood of higher extreme values from the mean, if it is negative (platykurtic) there is less likelihood of extreme values from the mean, and if it is equal to zero we have a mesokurtic distribution. Finally, the coefficient of variation (CV) is a measure of dispersion of a probability distribution. It is defined as the ratio of the standard deviation to the mean and is useful in that it tells us the variability of tariffs from the average tariff.

To the extent that a normal distribution is mesokurtic with zero skewness, the distribution of tariffs is generally close to normal (at least after reforms). As can be seen the skewness and kurtosis estimates are close to zero for most of the countries, the exceptions being Egypt and Morocco. A technocratic reform would in all likelihood be fairly straightforward. For example, it might be that all tariffs are cut by a certain percentage, and perhaps that products with tariff peaks are cut by a higher percentage, or that in general all products are moved into a smaller number of lower (than initial) tariff rates/bands.

Figure 1 Tariff Structure in Ethiopia 1995 and 2001





If reforms are technocratic we would expect the skewness statistic and the coefficient of variation to decline, or at least stay fairly constant, as tariffs are reduced, while the kurtosis statistic should fall (there are fewer extreme values). The nine statistics in Table 10 are reported for each country in the years when tariffs change. For three of the countries there were periods when the average tariff increased. In Tanzania the average tariff increased from 19.5% in 1994 to 22% in 1997 but then fell to 16% in 2000; this was, in all likelihood, due to an increase in the number of tariff lines with higher values used in 1997 (demonstrated by a rise in the modal value) which subsequently fell back to the 1994 level in 2000. In Kenya tariffs averaged 35% in 1995 and then fell to an average of 17% percent in 2000, however tariffs increased to an average of 19% in 2001. In Morocco the average tariff in 1993 was 24% which subsequently increased to 33% in 2002. For the remaining countries the average tariff fell throughout the period; for example in Egypt the average tariff fell by approximately 13 percentage points whilst in Ethiopia and Uganda the average tariff fell by 10 percentage points.

The technocratic reform proposition appears to be supported by the skewness and kurtosis statistics for each country. In general liberalisation is of the 'across the board' type. For example, Algeria's skewness statistic is almost zero for each year; the coefficient of variation declines by approximately 10 percentage points, and the kurtosis statistic falls from -0.82 to -1.60 (it becomes more negative, so declining likelihood of extreme values). This pattern is also visible for Ethiopia, Kenya, Tanzania and Uganda. Figure 1 illustrates the case of Ethiopia (selected as the political economy variables performed bet in this case): the broadly normal distribution is maintained but there is a significant reduction in the range of tariffs between 1995 and 2001. The distribution becomes more compressed with relatively fewer tariff lines above the mean. Interestingly the possibility of a technocratic reform may be even clearer for Egypt, where the kurtosis statistic falls dramatically, suggesting that tariff peaks were largely eliminated. In addition, the coefficient of variation for some countries fell dramatically, for example for Egypt from 4.66 in 1998 to 0.87 in 2002. Finally, the statistics for Morocco should be interpreted with care because we are comparing two classifications, one 8-digit and the other 10-digit. The overall picture is consistent with technocratic reforms that preserve the distribution but eliminate maximum tariffs and reduce the dispersion.

6 Conclusions and Implications

Most African countries reduced tariffs during or since the 1990s. The impetus for import liberalisation came primarily from multilateral institutions; while they may propose an essentially technocratic structure of reductions, one would expect industry lobbies to try and influence the pattern of reductions, preserving at least their relative protection. This paper explores the extent to which the structure of tariffs and tariff reforms in Africa can be explained by political economy influences, the alternative hypothesis being that reform was technocratic. Data limitations restricted the set of explanatory variables that could be employed and required us to restrict attention to scheduled tariffs. Obviously this does not capture the true picture of protection for a sector. The widespread use of exemptions implies that actual protection for a sector may be less than suggested by scheduled tariffs, although there is no evidence that this significantly affects the broad pattern of relative protection. On the other hand, as some countries use 'special duties' to protect specific products, we may underestimate protection. Furthermore, we are unable to allow for non-tariff barriers, although most quantitative restrictions on imports had been removed by the 1990s (Morrissey, 2002) and our use of measures of the change in imports may control for this to some extent (as the presence of non-tariff barriers should restrict the growth of imports). Nevertheless, the structure of tariffs and tariff reforms is indicative of the cross-sector pattern of protection.

The first piece of analysis in the paper was motivated by the Grossman and Helpman (1994) model and applied to data for five African countries. The model strictly interpreted does not fit the data, but this is unsurprising as it is not a model of African lobbying. There is evidence that a measure of sector size is associated with relative protection: larger sectors (measured by number of establishments and/or employees) benefit from higher tariffs. Firm size does not appear to influence protection (with the exception of Egypt), suggesting that governments do not attach weight to firm lobbying (at least in setting relative tariffs), but sector size (i.e. the population of producers and/or employees) does appear to affect protection. The implication is that relatively larger sectors, presumably more important for the economy, receive relatively greater protection. Insofar as domestic production capacity, export or import-competing, should be correlated with sector size, the population the government favours is that of producers, i.e. it is producer (or labour) welfare that is weighted rather than consumer welfare. These results support the 'adding machine' model rather than the 'interest

group' model, where protection should be greater for sectors with lager firms (this is only supported in Egypt).

The second piece of analysis was exploratory, testing for determinants of the pattern of tariff reductions (in six countries). We find no consistent evidence across the six countries that the pattern of tariff reductions is related to the change in imports, the import demand elasticity and the manufacturing dummy variable. The results suggest that these variables have almost no explanatory power, with the exception of Ethiopia (where tariffs were reduced least in sectors with rising imports and manufacturing receives greater protection than agriculture). A general interpretation implies that political economy factors do not appear to be affecting the reform of the tariff structure in these six African countries. The significant effect of the initial level of tariffs is consistent with technocratic reform (but contrary to predictions of the 'status quo' model): sectors with higher tariffs (assumed to imply having secured greater protection) experienced a greater percentage reduction in tariffs.

The final piece of analysis considered descriptive statistics for the distribution of tariffs and how this alters as tariff rates were changed for seven countries. The evidence supports a technocratic pattern of tariff reform: the level of tariffs was reduced, by more for products with higher initial tariffs, and the spread of the distribution was compressed. In general, reforms were associated with reductions in the skewness of the distribution (in particular away from extreme high values) and in the coefficient of variation, often dramatically. The support for technocratic reform is evident in all countries irrespective of whether political economy variables were significant. For example, Egypt exhibited no evidence of political economy influences whereas Ethiopia exhibited the most evidence for political economy influences on tariff reforms, but in both cases and the pattern of reforms appeared technocratic.

The lack of support for the political economy model does not in itself imply that such factors are unimportant. It may simply be that our data are inadequate to capture the political economy influences. It might be that political economy factors influenced the initial pattern of protection prior to trade liberalisation but because of data limitations it is impossible to verify this. In this context it is relevant that the technocratic reforms largely preserve the relative pattern of tariff protection. The analysis based on descriptive statistics does not demonstrate that political economy factors exert no

influence on the pattern of trade liberalisation, but the results do suggest that any impact is minor.

Our conclusion is not that political economy factors have not been important in African trade policy, although there is little evidence that they had an important influence on the pattern of tariff reductions implemented since the early 1990s. Observers of policy-making in Africa know that lobbies do make representation to the government, especially the Ministries of Finance and Trade, and do seek protection (they resist tariff reductions). However, the lobbies are rarely organised on a sector-specific basis; they are more likely to represent broad interests such as Chambers of Commerce, manufacturing, traditional (agricultural) exporters, etc. Analysis motivated by the G-H model for African countries did yield some consistent qualitative implications: a relatively low proportion of the population are politically organised, in terms of lobbying for protection, and protection seems to be greater for larger sectors. As these are likely to be more important for the economy, and provide higher shares of formal private employment, the government may be attaching weight to the population of producers and wage labour in determining protection, rather than responding directly to particular (large) firms in organised lobbies.

The tariff reforms implemented since the early 1990s do appear to have eroded the degree of protection conferred on favoured sectors, as would be expected, but also eroded the degree of relative protection. Even if favoured sectors are more protected than other sectors, this is now true to a lesser degree than it was prior to the reforms. This is largely because the reforms were essentially technocratic, consistent with persuasive influence on implementation by external agencies, especially the World Bank and WTO.

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Appendix Tables

Table A1: ISIC Product Description and Elasticity Concordance.

ISIC	Product Description	Sector	Code
311	Food products	Processed Food Beverages & Tobacco.	3
313	Beverages	Processed Food Beverages & Tobacco.	3
314	Tobacco	Processed Food Beverages & Tobacco.	3
321	Textiles	Textiles.	8
322	Wearing apparel except footwear	Textiles.	8
323	Leather products	Footwear, Headgear etc.	9
324	Footwear except rubber or plastics	Footwear, Headgear etc.	9
331	Wood products except furniture	Woods.	7
332	Furniture except metal	Woods.	7
341	Paper and products	Woods.	7
342	Printing and publishing	Chemicals.	5
351	Industrial chemicals	Chemicals.	5
352	Other chemicals	Chemicals.	5
353	Petroleum refineries	Mineral Fuels.	4
354	Misc petroleum and coal products	Mineral Fuels.	4
355	Rubber products	Rubber & Hides.	6
356	Plastic products	Stones, Pearls.	5
361	Pottery china earthenware	Stones, Pearls.	10
362	Glass and products	Stones, Pearls.	10
369	Other non-metallic mineral products	Stones, Pearls.	10
371	Iron and steel	Metals.	11
372	Non-ferrous metals	Metals.	11
381	Fabricated metal products	Metals.	11
382	Machinery except electrical	Machinery Mechanical Appliances.	12
383	Machinery electric	Machinery Mechanical Appliances.	12
384	Transport equipment	Vehicles.	13
385	Professional and scientific equipment	Precision Instruments.	14
390	Other manufactured products	Miscellaneous Manufactures	16

Table A2: Applying the G-H Model to Kenya

Panel A	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.0000959**	0.00433**	0.578***	0.16
	se	0.000043	0.0021	0.032	
	Employees	0.0000926**	0.00144	0.599***	0.09
	se	0.000045	0.0037	0.033	
	Emp/Est	0.00240***	-0.00230**	0.575***	0.21
	se	0.00088	0.00088	0.031	
Median	Establishments	0.0000922**	0.00206**	0.581***	0.18
	se	0.000042	0.00089	0.031	
	Employees	0.0000924**	0.00197**	0.581***	0.17
	se	0.000043	0.0009	0.031	
	Emp/Est	0.00583***	-0.00573***	0.568***	0.22
	se	0.0021	0.0021	0.031	
Quartile	Establishments	0.0000949**	0.00407*	0.583***	0.15
	se	0.000043	0.0021	0.032	
	Employees	0.0000925**	0.0014	0.599***	0.09
	se	0.000045	0.0037	0.033	
	Emp/Est	0.00240***	-0.00230**	0.574***	0.20
	se	0.00089	0.00088	0.031	

Panel B	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.0000985**	0.00439**	0.577***	0.17
	se	0.000043	0.0021	0.032	
	Employees	0.0000941**	0.0015	0.598***	0.09
	se	0.000045	0.0037	0.033	
	Emp/Est	0.000923*	-0.000833*	0.591***	0.14
	se	0.00049	0.00049	0.031	
Median	Establishments	0.0000901**	0.00199**	0.582***	0.18
	se	0.000042	0.0009	0.031	
	Employees	0.0000906**	0.00190**	0.582***	0.17
	se	0.000043	0.0009	0.031	
	Emp/Est	0.00196**	-0.00187*	0.587***	0.16
	se	0.00096	0.00096	0.031	
Quartile	Establishments	0.0000974**	0.00414*	0.582***	0.16
	se	0.000043	0.0021	0.032	
	Employees	0.0000941**	0.00145	0.598***	0.09
	se	0.000045	0.0037	0.033	
	Emp/Est	0.000922*	-0.000832*	0.591***	0.14
	se	0.00049	0.00049	0.031	

Panel C	Measure	Elasticity 1			Elasticity 2		
		a	β	α_L	a	β	α_L
Mean	Est	230.96	0.996	0.022	179.87	0.994	0.018
	Emp	694.50	0.999	0.064	-568.23	1.002	-0.052
	Emp/Est	-435.82	1.002	-1.043	-1213.2	1.001	-1.109
Median	Est	485.48	0.998	0.045	1277.25	0.999	0.114
	Emp	507.66	0.998	0.047	1305.60	0.999	0.117
	Emp/Est	-175.53	1.006	-1.017	-121.49	1.008	-1.012
Quartile	Est	245.72	0.996	0.023	171.83	0.994	0.017
	Emp	714.35	0.999	0.066	-543.52	1.002	-0.050
	Emp/Est	-435.82	1.002	-1.043	-1213.2	1.001	-1.108

Notes: As for text, Table 1.

Table A3: Applying the G-H Model to Tanzania

Panel A	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.000270***	0.0228*	0.396***	0.18
	se	-0.000097	-0.012	-0.023	
	Employees	0.0102	-0.00995	0.402***	0.14
	se	-0.0099	-0.0099	-0.024	
	Emp/Est	0.0151	-0.0149	0.397***	0.17
	se	-0.0093	-0.0093	-0.023	
Median	Establishments	0.000276***	0.0204**	0.386***	0.23
	se	-0.000095	-0.0083	-0.023	
	Employees	0.0192	-0.0189	0.403***	0.15
	se	-0.016	-0.016	-0.023	
	Emp/Est	0.018	-0.0177	0.399***	0.16
	se	-0.012	-0.012	-0.023	
Quartile	Establishments	0.000263**	0.00889	0.407***	0.13
	se	-0.0001	-0.017	-0.023	
	Employees	0.0102	-0.00995	0.402***	0.14
	se	-0.0099	-0.0099	-0.024	
	Emp/Est	0.0187**	-0.0184**	0.389***	0.2
	se	-0.0087	-0.0087	-0.023	

Panel B	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.000189***	0.0317	0.397***	0.16
	se	-0.000069	-0.022	-0.024	
	Employees	0.00611	-0.00942	0.405***	0.13
	se	-0.01	-0.016	-0.025	
	Emp/Est	0.0117	-0.0183	0.399***	0.15
	se	-0.0099	-0.016	-0.024	
Median	Establishments	0.000196***	0.0332***	0.381***	0.26
	se	-0.000065	-0.011	-0.023	
	Employees	0.0105	-0.0165	0.406***	0.13
	se	-0.016	-0.025	-0.023	
	Emp/Est	0.00939	-0.0146	0.404***	0.14
	se	-0.011	-0.018	-0.024	
Quartile	Establishments	0.000184**	0.0109	0.408***	0.13
	se	-0.00007	-0.025	-0.024	
	Employees	0.00611	-0.00942	0.405***	0.13
	se	-0.01	-0.016	-0.025	
	Emp/Est	0.0206**	-0.0324**	0.382***	0.23
	se	-0.0082	-0.013	-0.024	

Panel C	Measure	Elasticity 1			Elasticity 2		
		a	β	α_L	a	β	α_L
Mean	Est	43.87	0.98	0.01	31.55	0.97	0.01
	Emp	-101.53	1.01	-1.03	-106.81	1.01	-0.65
	Emp/Est	-68.13	1.01	-1.01	-55.28	1.02	-0.64
Median	Est	49.03	0.98	0.01	30.13	0.97	0.01
	Emp	-53.93	1.02	-1.02	-61.24	1.02	-0.64
	Emp/Est	-57.51	1.02	-1.02	-69.14	1.01	-0.64
Quartile	Est	112.52	0.99	0.03	91.76	0.99	0.02
	Emp	-101.53	1.01	-1.03	-106.81	1.01	-0.65
	Emp/Est	-55.36	1.02	-1.02	-31.50	1.03	-0.64

Notes: As for Table 2.

Table A4: Applying the G-H Model to Egypt

Panel A	Measure	γ	δ	Constant	R^2
Mean	Establishments	-0.00043	-0.0373	1.051**	0.00
	se	0.012	0.11	0.44	
	Employees	-0.000693	-0.0512	1.087**	0.00
	se	0.012	0.11	0.45	
	Emp/Est	-0.00453	0.00611	1.017**	0.00
	se	0.019	0.022	0.42	
Median	Establishments	-0.0000849	-0.00124	1.009**	0.00
	se	0.012	0.028	0.42	
	Employees	0.000635	0.0584	0.873*	0.01
	se	0.012	0.1	0.48	
	Emp/Est	-0.00418	0.00564	1.013**	0.00
	se	0.019	0.022	0.42	
Quartile	Establishments	-0.000699	-0.0434	1.093**	0.00
	se	0.012	0.093	0.46	
	Employees	-0.000649	-0.0492	1.081**	0.00
	se	0.012	0.11	0.45	
	Emp/Est	0.00313	-0.00488	0.996**	0.00
	se	0.019	0.022	0.42	

Panel B	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.00887***	-0.0202	0.727*	0.19
	se	0.0026	0.11	0.37	
	Employees	0.00885***	-0.029	0.745*	0.19
	se	0.0026	0.11	0.38	
	Emp/Est	-0.00172	0.0107	0.764**	0.19
	se	0.022	0.022	0.37	
Median	Establishments	0.00890***	-0.00409	0.721*	0.19
	se	0.0026	0.033	0.37	
	Employees	0.00686***	0.111***	0.248***	0.97
	se	0.0005	0.0031	0.067	
	Emp/Est	-0.00145	0.0104	0.758**	0.19
	se	0.022	0.022	0.36	
Quartile	Establishments	0.00885***	-0.0222	0.743*	0.19
	se	0.0026	0.1	0.38	
	Employees	0.00885***	-0.0281	0.743*	0.19
	se	0.0026	0.11	0.37	
	Emp/Est	0.00685***	0.0462***	0.311	0.48
	se	0.0021	0.0088	0.29	

Panel C	Measure	Elasticity 2		
		a	β	α_L
Mean	Est	-41.51	1.025	-0.365
	Emp	-27.48	1.038	-0.241
	Emp/Est	81.97	0.988	0.003
Median	Est	-84.07	1.012	-0.740
	Emp	6.75	0.871	0.047
	Emp/Est	86.99	0.989	0.043
Quartile	Est	-36.28	1.028	-0.318
	Emp	-28.25	1.037	-0.248
	Emp/Est	16.95	0.944	0.117

Notes: As for Table 3.

Table A5: Applying the G-H Model to Morocco

Panel A	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.0146	-0.0081	0.765***	0.04
	se	0.012	0.012	0.053	
	Employees	0.018	-0.0116	0.754***	0.05
	se	0.012	0.012	0.055	
	Emp/Est	0.0116***	-0.0113*	0.779***	0.07
	se	0.0044	0.0064	0.048	
Median	Establishments	0.0122	-0.00559	0.771***	0.04
	se	0.012	0.012	0.052	
	Employees	0.00523	0.00168	0.783***	0.04
	se	0.012	0.012	0.052	
	Emp/Est	0.00322	0.00443	0.785***	0.04
	se	0.0073	0.0078	0.049	
Quartile	Establishments	0.0163	-0.00979	0.759***	0.04
	se	0.012	0.012	0.055	
	Employees	0.0179	-0.0114	0.755***	0.05
	se	0.012	0.012	0.055	
	Emp/Est	0.0115***	-0.0114*	0.778***	0.07
	se	0.0044	0.0064	0.048	

Notes: As for Table 4.

Table A6: Applying the G-H Model to Tunisia

Panel A	Measure	γ	δ	Constant	R^2
Mean	Establishments	0.00276	0.00965*	0.625***	0.10
	se	0.0019	0.0052	0.021	
	Employees	0.00614**	-0.00477	0.627***	0.08
	se	0.0026	0.0033	0.021	
	Emp/Est	0.00338*	0.00344	0.629***	0.05
	se	0.002	0.006	0.022	
Median	Establishments	0.00743**	-0.00591*	0.626***	0.09
	se	0.0029	0.0034	0.021	
	Employees	0.00765**	-0.00625*	0.626***	0.10
	se	0.0029	0.0034	0.021	
	Emp/Est	0.00539	-0.0022	0.629***	0.05
	se	0.0038	0.0041	0.022	
Quartile	Establishments	0.00276	0.00953*	0.625***	0.10
	se	0.0019	0.0052	0.021	
	Employees	0.00560**	-0.00435	0.628***	0.07
	se	0.0025	0.0034	0.021	
	Emp/Est	0.00306	0.00371	0.628***	0.06
	se	0.002	0.0044	0.021	

Panel B	Measure		Elasticity 1	
		a	β	α_L
Mean	Est	103.91	0.9905	0.2860
	Emp	-210.93	1.0048	-1.2872
	Emp/Est	291.65	0.9966	0.9593
Median	Est	-170.46	1.0059	-1.2572
	Emp	-161.22	1.0062	-1.2240
	Emp/Est	-456.99	1.0022	-2.4500
Quartile	Est	105.22	0.9906	0.2896
	Emp	-231.17	1.0043	-1.2874
	Emp/Est	270.36	0.9963	0.8248

Notes: As for Table 5.