

**Demography, Development and the Origin of Democracy:
A Model with Case Studies of Archaic Athens and Maritime England**

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1. Introduction

Recent models of the origin of democracy fall into one or the other of two disjoint sets – models in which constitutional change is driven by violence or at least the threat of violence (notably Acemoglu and Robinson[2000]) and those that, in contrast, portray a peaceful transition (Lizzeri and Persico [2004], Fleck and Hanssen [2006]). The justification offered for the former is that an extension of the franchise is against the interests of the median voter in the pre-existing constitution and is unlikely therefore to be peacefully accepted. The protagonists of peaceful political change accept that this is true when there are sharp conflicts of interest on major issues. But they argue that, in critical matters, there may be a convergence of interest on a common solution, which however is not implementable under the pre-existing constitution. A broadening of the franchise may, for example, be a commitment device indispensable for encouraging long-term investment by the previously disenfranchised in areas of common interest: this would create a unanimous mandate for constitutional reform (Fleck and Hanssen). Alternatively, it may lead to an expansion of spending on public goods with diffuse benefits which are desired by a majority of the preexisting electorate but were neglected earlier because tax revenues were dissipated in transfers to small groups of swing voters (who no longer count for much in an enlarged electorate) (Lizzeri and Persico)¹.

The Lizzeri-Persico thesis – and its counterpart outlined in footnote 1 – while they work beautifully in a Parliamentary democracy, do not apply to direct democracies (or indirect democracies where constitutional amendments must be approved by referendum). On the other hand, both Acemoglu and Robinson's and Fleck and Hanssen's models fit constitutions with direct as well as indirect voting. Despite their divergent conclusions, both of these accept the relevance of the median voter theorem to the problem. The theorem however applies only when voter preferences are determined by a single voter characteristic (such as

¹ One could also turn Lizzeri and Persico's argument on its head and argue that, in an indirect democracy, the franchise could be extended despite the opposition of a majority of the preexisting electorate since it is favoured by a pivotal subset of swing voters who feel strongly enough about it to switch party loyalties or at least to abstain if their views on this issue are ignored.

wealth) so that voters can be arranged along a linear spectrum. With more complex voter preferences (determined for instance by religion, caste, language, occupation or regional location as well as wealth), the median voter theorem loses its value. Peaceful extension of the franchise then becomes possible even without a unanimous mandate. A majority could conceivably be mustered in its favour among those who already have voting rights despite the opposition of a minority. What is more, if an extension of the franchise makes possible a substantial increase in national income, side payments could be designed that compensate the losers, thus resulting in unanimous acquiescence in, if not enthusiasm for, reform.

We argue in this paper that constitutions represent solutions to a bargaining game between groups that differ not just – indeed not necessarily – in wealth, a game in which revolution is one of the possible threats employed. Constitutional change is the product of changes in the parameters of this game. Whether the change was driven by the threat of revolution or not depends on the credibility of the threat, given the parameters (both old and new) in any specific case. We illustrate this by focussing on the co-evolution of political and economic development in a subset of economies – those that, in addition to experiencing population pressure, were geographically suited to trade, and had a comparative advantage in non-cereal products. We argue that the potential gains from trade in such an environment could have been so substantial that the losers from trade could be compensated and a Pareto-improvement achieved by installing a constitutional regime that facilitated non-cereal production and freer trade. A second factor that, in demographically constrained economies, worked in the same direction were congestion effects, external diseconomies that particularly affected townsmen and could only be controlled by a regime not totally dominated by landed interests. Although we use ancient Athens and maritime England as case studies, our story is more generally applicable to other countries which fall within this subset. In South Asia, our story, while not particularly relevant to India (where the transition to democracy was part of the process of the dismantling of a colonial regime), resonates strongly with the history of Pakistan.

A brief sketch of our basic argument is as follows. In the initial stages of development, these economies are primarily agrarian. Political power as well as economic clout is concentrated in the hands of the landowning gentry, and there is little or no emphasis on trade. With population pressure, Ricardian diminishing returns kick in. Small farmers may

be marginalized or forced to resort to other channels of livelihood. Agrarian and other workers suffer due to rising food prices. We argue that at this point, a coalition of interests forms between workers, townsmen, marginalized farmers and non-cereal producers : all of these groups, regardless of income, want a change in policy that amounts to opening up the economy to trade, non-cereal production and urbanization – a policy that the landowning gentry opposes. When however the threat of a revolt by this coalition becomes strong enough or the potential gains from such a switch become large enough, the landowners concede and open up the economy. Trade and urbanization transfer income from the landowners to non-cereal producers and workers. To make their gains permanent, and to guard against policy reversals, these *nouveau riche* producers and workers are likely to demand a voice in the political process. However, to avert the costs of armed conflict, they may offer landowners a share in the gains from trade which may leave the latter better off than before. We show that for high costs of armed conflict, and low prospects of military success for the rebels, the outcome that emerges is one where landowners, producers and workers peacefully share political power and overall income rises as a result of trade.

In section 2, we set up a model to illustrate our points. This model can address contexts where hired agricultural labor was rare, as in ancient Athens. In section 3, we set up another model which deals with contexts where there was wage labor in agriculture. While the model in section 2 is applicable to ancient Athens, the one in section 3 better illustrates the case of maritime England. In sections 4 and 5, we explain how our model applies to the cases of ancient Athens and maritime England. Section 6 concludes.

2. A Model Without Hired Agrarian Labor

2.1 Population Growth and Inequality

Consider a case where there is no hired agrarian labor, and the land endowment N is initially equally distributed among the population, so that there is no initial inequality in land holdings. Assume that the growth of population is determined by a random binary process: there is a probability λ that each household will spawn two in the next generation (implying a bifurcation of its land holding) and a probability $(1 - \lambda)$ that it will merely replicate itself (implying an unchanged holding size). The consequence will be the emergence of inequality – a binomial distribution of plot sizes. After n generations, the largest ones, comprising a

fraction $(1 - \lambda)^n$ of the total population, will still be at their initial size (N/L where L was the initial number of households) while the smallest ones, comprising λ^n of the population, are a fraction $(1/2)^n$ of their initial size. The population meanwhile will grow at a rate λ per generation.

Differential survival with population growth thus creates inequality in land ownership over the course of a few generations. We now add to this setup a random harvest shock. Shocks to the harvest are randomly distributed with zero mean. Large plots have enough produce to guard against a severe negative shock: they can build up buffer stocks in good years – a form of precautionary saving. Small farmers, however, have barely enough produce to meet their needs and are unable to use a buffer stock when hit by a negative harvest shock. Instead, they borrow from large farmers. A run of harvest failures leaves them unable to repay their debts and forces them to sell off their land. Concentration of land ownership thus intensifies and there emerges a class of indebted or landless peasants.

Inequality of course only accentuates the basic problem of growing food scarcity in a closed or semi-closed economy: subsistence requirements rise in proportion to population while diminishing return drives down food output per head. Rising food shortages depress relative non-cereal prices, making easy access to the outside world of cheap and abundant grain increasingly attractive to non-cereal producers and the growing army of the landless. A clash of class interests develops over the issue of opening up the economy between the large land-owners and an incipient coalition of non-cereal producers and indebted or landless peasantry.

2.2 Coalitions and Trade

There thus develops a sharp cleavage in class interests between the landowning gentry on the one hand and a potential coalition of workers and non-cereal producers on the other. Common interests within a class may not of course suffice to motivate collective action by the class on account of the free rider problem. A class can organize itself for collective action either if its members develop a class consciousness strong enough to override narrowly selfish interests or, more plausibly, if it can design a set of rewards and sanctions to enforce collective decisions (for example through its control of private goods to which it can deny deviant members access) (Olson [1965]). All this implies a cost. Unless the incentive

for class action significantly exceeds this cost, the threat of such action will not be credible to the opposing class.

In the formal modeling that follows, we ignore the costs of collective action in order to simplify the analysis and sharpen the focus on trade policy. For the same reason, we also ignore externalities like congestion effects and public goods, though these have obviously been important in more recent examples of political transition in densely populated, relatively urbanized societies. Incorporating these effects is likely to strengthen our conclusions, though they may change the parameters.

What type of policy transition would the coalition demand? Policies that encourage free trade or export production would be in its interests. Denoting non-cereal by M , and the relative price of non-cereal in terms of grain by p , policies which open the economy and encourage the export of “non-cereal” would result in a rise in p to p^* - the global price of non-cereal set on the world market (or equivalently, lower the price of cereal, given that the economy has a comparative advantage in non-cereal products). Dispossessed farmers could then switch to the non-cereal production: their income as a class, pM , is evidently rising in

p : the derivative with respect to p being $M + p \frac{\delta M}{\delta p} > 0$.

In terms of income, the landowning class is likely to initially be hurt by this policy. As the relative price of non-cereal rises from p to p^* , cheap grain imports make it necessary for landowners to lower the price of the grain they sell. Assuming that big landowners are net sellers of the grain they produce, their income falls from $F(L, N)$ to $\frac{pF(L, N)}{p^*}$, where L denotes labor in agriculture (personal and slave labor) and N denotes land.

We have thus illustrated a situation where the landowning gentry is opposed to opening up the economy, while a coalition of workers and non-cereal producers is in favor of it. Since the landowning gentry has political power, why should it agree to deviate from the *status quo*? This is a particularly intriguing question since a free trade policy has its political corollaries. Its beneficiaries need to find a way to sustain their gains and guard against policy reversals. The best way to do this is by demanding a voice in the political process. Without such a political role, the merchants and workers would have to resign themselves to periodically repeating their battle for free trade – and not by peaceful constitutional means

either. Thus, a free trade policy implies and involves not merely a new economic regime but a constitutional role for its beneficiaries as well – and this is understood and allowed for by participants in the bargaining process. They bargain in short not just for free trade in the narrow economic sense but also for political rights for merchants and workers.

To explain the paradox of a possibly constitutional regime change in these circumstances, we posit that the landowning gentry is aware of a threat that the coalition may revolt against it. A revolt by the coalition against the gentry has a probability x of success, depending on the overall military capabilities of the two parties. If successful, the rebels impose a non-monetary, non-transferable punishment P_1 on the incumbents; if they fail, a punishment P_c is imposed on them. In either case, both parties must bear a cost of conflict in the event of revolt. This, however, is asymmetrically distributed. The party with constitutional legitimacy, the incumbent in power, bears a lower cost: $A_i < A_r$ where A_i and A_r are the costs incurred by the incumbents and the rebels respectively. In what follows, Y_t and Y_a denote national income under free trade and autarky respectively, while l_a denotes the landowning gentry's autarky payoff. The coalition's expected payoff from a revolt is thus

$$xY_t - (1-x)P_c - A_r.$$

The threat of revolt is credible if and only if this is at least as large as its payoff in *status quo*:

$$xY_t - (1-x)P_c - A_r \geq Y_a - l_a. \quad (1)$$

implying

$$(1-x)P_c \leq l_a + xY_t - Y_a - A_r \quad (2)$$

This makes sense only if the RHS of inequality (2) is positive: a small enough, but positive, punishment level then exists which would be compatible with a credible threat of revolt. On the other hand, the establishment would like to deter revolt by threatening the severest possible punishment P_c^* that can be credibly implemented. Revolt is possible if (2) holds for $P_c = P_c^*$. If not, there will be no revolt and the status quo will constitute the threat point.

We use a Nash bargaining framework to analyze bargaining between the landowning gentry and the opposing coalition. The two parties bargain over a division of payoffs in the event of transition to a free trade policy. We denote these payoffs – which may involve side payments by one party to the other – by l_t (for the landlords) and C_t (for the coalition) where

$$l_t + C_t = Y_t \quad (3)$$

Here Y_t is income after free trade, which is larger than income under autarky, Y_a .

What are the threat points for this Nash bargain? If the parties cannot agree, there is a revolt and no transition to free trade. The landlords' payoff in this event, \bar{v} is their threat point.

$$\bar{v} = (1 - x)l_a - xP_1 - A_i. \quad (4)$$

where l_a is the landlords' net autarky income.

If there is a revolt, landlords incur the cost of armed conflict, A_i . They win the conflict with probability $1-x$ and enjoy the autarky payoff l_a , or lose with probability x and incur the non-monetary punishment P_1 . The coalition would set P_1 at its highest implementable value P_1^* so as to minimize the gentry's threat options and so secure the best possible bargain.

The coalition's threat point

$$\bar{u} = xY_t - (1 - x)P_c^* - A_r \quad (5)$$

Therefore, the Nash bargain may be written as

$$\text{Max}_{l_t} [l_t - \bar{v}][Y_t - l_t - \bar{u}]$$

where \bar{v} is given by (3) and \bar{u} by (4). The solution to this maximization problem is

$$l_t = (Y_t + \bar{v} - \bar{u})/2 = [(1 - x)(Y_t + l_a) + A_r - A_i + (1 - x)P_c^* - xP_1^*]/2 \quad (6)$$

Therefore, the threat of rebellion prompts a transition to a free trade policy with a division of payoffs defined by (6) – provided the punishment parameter satisfies (2)..

Suppose however that P_c^* is high enough to credibly deter rebellion. The *status quo* will then represent the threat point and a Nash contract that represents a Pareto-improvement will be reached if, as is likely, free trade generates a surplus over autarky. In this event,

$$l_t - l_a = (Y_t - Y_a)/2. \quad (7)$$

Free trade will be implemented with appropriate side payments and a constitutional regime that can sustain it established without any credible threat of rebellion. Inequality (2) indicates that this will be more likely (1) the higher the maximum implementable punishment for rebellion, (2) the higher the cost of armed conflict for the rebels, (3) the lower the probability of success of the rebellion, (4) the larger the coalition's income in *status quo* and (5) the smaller the free trade income.

Once a new constitution is in place with a larger voice for merchants and workers and free trade has been established, what are the chances of a counter-revolution by the gentry?

Obviously, there is no incentive for the aristocracy to revolt if l_t , its income under the new dispensation, exceeds l_a , its earlier income – as it would when the constitution has been changed without a threat of revolt. Where, however, a credible threat of rebellion determined the new settlement, l_t could fall short of l_a . From (6), this would happen if

$$(1 + x)l_a \geq (1 - x)Y_t + A_r - A_i + (1 - x)P_c^* - xP_1^* \quad (8)$$

If the gentry revolt – and the parameters (cost of conflict of incumbents and rebels, probability of military success of the two parties and the punishment threats) remain unchanged – their expected payoff will be

$$(1 - x)l_a - A_r - xP_1^*. \quad (9)$$

since x is the probability of victory of the coalition and A_r the cost of conflict of the gentry (who are now the rebels).

A comparison of (9) with (4) reveals that, since $A_i < A_r$, the payoff the gentry can hope for if they revolt is less than \bar{v} , their threat option in the earlier bargain. And since $\bar{v} < l_t$, the gentry would not find it in their interest to revolt.

It is evident that the question whether constitutional reform represents a completely peaceful transition or is driven by the threat of revolt depends on the specific parameters at the time – the surplus expected from the regime change, the costs of conflict, the relative military strength of the two parties and the feasible punishments for the losers. The process therefore is bound to vary over space and time. It differs from country to country, and, even for a given country, there is no such thing as a permanent constitutional covenant or an invariant process of constitutional change.

3. A Model with Hired Agrarian Labor

3.1 The Static Model

We consider a two-sector economy producing food (denoted by A) and non-food (denoted by M). The economy is initially closed. Food production requires agricultural labor L_a and land, N . We normalize the unit of land so that $N=1$: then the food production function may be written as

$$A = F(L_a), F' > 0, F'' < 0 \quad (10)$$

Food production is subject to diminishing returns to land.

Non-food production requires labor L_m and capital K . We thus have a specific factors model. The production function for non-food is

$$M = L_m^\beta K^{1-\beta} \quad (11)$$

where $0 < \beta < 1$.

Let p denote the price of non-food in terms of food, the numeraire. Then the wage rate of hired labor, w , equals the marginal physical product of labor in agriculture, and the marginal value product of labor in the non-food sector.

$$w = F'(L_a) \quad (12)$$

$$= p\beta L_m^{\beta-1} K^{1-\beta} = \beta pM / L_m \quad (13)$$

Labor-market clearing gives us

$$L_a + L_m = L \quad (14)$$

National income Y is given by

$$Y = A + pM \quad (15)$$

We assume a Stone-Geary utility function

$$u = (a - \underline{a})^\alpha m^{1-\alpha} \quad (16)$$

where a and m are individual consumptions of food and non-food and \underline{a} is the subsistence requirement of food. This implies a linear expenditure system with an individual demand function for food

$$a - \underline{a} = \alpha(y - \underline{a}) \quad (17)$$

where y is individual income. The aggregate demand function for food is then independent of income distribution. In a closed economy, where consumption and production of each good must balance in equilibrium, this implies

$$A - L\underline{a} = \alpha(Y - L\underline{a}) \quad (18)$$

Equations (10) – (15) and (18) constitute a system of 7 equations in 7 variables – A , M , L_a , L_m , w , p and Y . We now move on to the effect of demographic pressure.

3.2 Demographic Pressure

Equations (15) and (18) together imply

$$(1 - \alpha)(A - L\underline{a}) = \alpha pM \quad (19)$$

Substituting from (13) for pM ,

$$(1 - \alpha)(A - L_a) = \alpha w L_m / \beta \quad (20)$$

Differentiation yields

$$(1 - \alpha)(w dL_a - a dL) = \alpha \{w dL_m + L_m F''(L_a) dL_a\} / \beta \quad (21)$$

Using equation (14), this reduces to

$$\{w(1 - \alpha + \alpha/\beta) - \alpha L_m F''(L_a)/\beta\} dL_a = \{(1 - \alpha)a + w\alpha/\beta\} dL \quad (22)$$

Now, if the wage is no lower than subsistence ($w \geq a$),

$$1 \geq dL_a/dL \geq 0 \quad (23)$$

so that an increase in population is partially absorbed in both sectors. This implies a lower marginal product of labour in both sectors in equilibrium, so that wages fall in terms of both products as a result of population growth.

The price effect of population growth is however ambiguous – though a food price increase can be shown to be likelier the closer wages are to subsistence. Population pressure then reduces worker incomes while benefiting land-owners, both on account of lower wage costs and of increased demand for food.

3.3 Coalitions and Trade

As our economy has a comparative advantage in non-cereals, opening up the economy would result in exports of non-cereal products and imports of grain, with a rise in the relative price p of non-food to food. p will rise until it matches p^* , the price of non-cereals in terms of grain set in the world market. The various interest groups in the closed economy correctly anticipate that p will rise if the economy is opened up. Will such a rise be to their interest?

In the open economy, domestic demand is no longer relevant for producers. Equilibrium will be described by equations (10) to (15) above with p becoming a parameter. Logarithmic differentiation of equations (12) and (13) with respect to the parameter yields

$$dw/w = F''(L_a) dL_a / F'(L_a) \quad (24)$$

$$= dp/p + L_m/M (\partial M / \partial L_m) dL_m/L_m - dL_m/L_m \quad (25)$$

$$= dp/p - (1 - \beta) dL_m/L_m \quad (26)$$

Since population is now given, $dL_a = -dL_m$, and we have

$$\{-F''/F' + (1 - \beta)/L_m\} dL_m = dp/p \quad (27)$$

Thus, $dL_m/dp > 0$: the rise in non-food prices due to the opening up of the economy attracts labor out of food production, raising its marginal product in that sector and the wage rate.

Landlords lose, on account of lower food prices, reduced output and higher wages. Non-food producers, on the other hand, gain more in higher prices and output than they lose in higher wages. Their income is

$$pM - wL_m = (1 - \beta)pM \quad (28)$$

which is an increasing function of p .

As in the previous model, a class conflict thus develops. The subsequent analysis regarding bargaining between the interest groups and the analysis of what happens after transition to free trade is identical to that in the model of Section 2.²

4. The origins of Athenian democracy

The rise of democracy in the Athenian city-state closely parallels our story of the consequences of demographic pressure in an agrarian economy with no hired labor. Its principal features were

1. a population explosion that created food scarcity and sharply skewed the distribution of land,
2. a potential for growth through trade based on specialization in and export of non-cereal products,
3. the initiation of a policy that encouraged the transition from a relatively self-sufficient cereal economy to a more diversified trading economy,
4. the locking-in of this policy through constitutional reform, increasing the political rights of the potential beneficiaries of the policy.

The Archaic period (800 – 480 BC) saw a population explosion throughout Greece. Her swelling population spilled over in colonization and settlement all around the Mediterranean and the Black Sea. But there were territorial limits to what the Hellenic world could hold against the opposition of surrounding peoples. Snodgrass [1977, 1980] estimates, on the basis of archaeological evidence, that, at the end of the eighth century BC, the population of Attica multiplied sevenfold in two generations; and, while this momentum could not have been long sustained, there can be little doubt that, by the end of the seventh, an unprecedented social crisis loomed over Athens. The exceptional intensity of this crisis was

² A minor exception is that the definition of L_A now changes to $F(L_a) - L_a F'(L_a)$.

due to the extreme inelasticity of her arable area. With a landscape even more rugged than that of the other Greek states, the rapid deforestation that Iron Age implements made possible and the ensuing soil erosion reduced Attica to a mass of eroded hillsides separated by a few patches of thin soil. The city could not feed itself in bad years; and, given the high variability of rainfall throughout Greece, bad years came thick and fast³. The poorer peasantry was sunk deep in debt and faced the prospect of dispossession and debt-slavery. Marginal and landless peasants were crowding into the city in search of a livelihood (Finley [1981]). The concentration of land-ownership in the landed aristocracy accelerated: a vertical stratification of property developed with the rich landlords monopolizing the relatively fertile plain and what remained of the poorer peasantry driven up the hillsides. By the time Solon was elected to the archonship, civic unrest was a very real threat. It was this crisis that shaped Solon's reforms, both economic and constitutional. Solon sought to avert rebellion by

1. canceling all debts, banning debt-slavery and ransoming and repatriating Athenian citizens sold into slavery abroad;
2. reducing the pressure on the land through a set of measures designed to stimulate non-cereal production and trade. Thus, while food exports were banned, olive oil exports were specifically exempted (Plutarch [1916]). Indeed, olive oil production was subsidized. A bounty was offered for every dead wolf handed over to the authorities, representing a subsidy to grazers – and to the wool and leather trades (Stanley [1999]). Merchants and craftsmen from other cities, Phoenician traders, Corinthian potters and ship-builders for example, were encouraged to settle in Athens by offers of citizenship, resulting in the gradual eclipse of Corinthian pottery exports by Athenian black- (and, later, red-) figured ware (Finley [1981]). Parents who failed to teach their children a trade were deprived of the legal right to old-age support from them, as an incentive to the formation of craft skills. The island of Salamis, which commanded the maritime routes

³ Peter Garnsey [1988] has disputed this long-established picture of Athens's food problems. More recent research (Alfonso Moreno [2007]) however has restored the traditional story in its essential details. Even Garnsey agrees that by 525 B.C., the city could no longer feed itself in bad years. Further, his argument that Solon's famous prohibition of grain exports at the beginning of the sixth century B.C. was designed only for bad years does not sound very convincing to an economist since a ban is unnecessary when high domestic prices and scarce domestic supplies make export unattractive any way. Much more plausible is the theory that the ban was intended to foster storage of temporary surpluses in good years when prices may have briefly dropped below those in some other city.

from the Hellespont to Athens, was captured (though temporarily) to protect Athens's trade from the depredations of her Megaran neighbors.

Solon consolidated his economic reforms by his constitution-making. He reduced the power of the nobility (the *eupatridae*) by transferring most of the functions of the *Areopagus* (which the nobles dominated) to a newly-established Council of 400, elected from four property classes into which he divided the population. Wealth thus replaced birth as the basis of political power. Further, the poorest class, the *thetes*, acquired the right to vote in the popular assembly, though they were still barred from speaking and from public office. Within the framework of this constitution, it was no longer possible for Solon's economic reforms to be reversed.

However, Solon's reforms did not involve land redistribution, full democratic rights or equitable participation in political office. There were major concessions to the erstwhile oligarchs: the rich were not expropriated and continued to play a dominant, though not exclusive, role in franchise and public office. By switching their farms from wheat to olives, they could participate in the economic benefits that Solon sought to achieve. Solon's reforms represented a compromise that delayed social crisis. But, in the face of continuing population growth, they failed to avert it in the long run. There was some growth of crafts and trade, but it was slow on account of the recapture of Salamis by Megara and the competition of other cities, especially those that had long-established colonies abroad. Class tensions continued to simmer and, after Solon, erupted in a series of coups and countercoups that ended with the final establishment of Peisistratus' *tyranny* and that of his sons.

Peisistratus persisted with Solon's policies designed to reduce the pressure on the land. He organized major construction projects (like the Parthenon) that created urban employment, strengthened the subsidies on the planting of olives and vines (*Athenaion Politeia*), conferred Athenian citizenship (and political rights) on immigrant traders and craftsmen and finally captured and held Salamis, thus ensuring the security of Athens's maritime trade. Meanwhile, population pressure continued to mount, the importance of Athenian trade and the affluence of merchants and craftsmen in the city continued to increase, as reflected in the acquisition of citizenship by immigrants among them. As they enriched themselves, they rose through Solon's hierarchy of property-classes to positions of ever greater political consequence. Politically, despite the unconstitutional character of their

seizure and retention of authority, the Peisistratids respected and strengthened Solon's framework, increasing the powers of the assembly and the Council, including the judicial functions of the latter. They were eventually ejected by a coup with Spartan help that installed an aristocrat Isagoras who began a process of 'purification', disenfranchising the immigrants on whom Solon and Peisistratus had conferred citizenship.

But Sparta's withdrawal restored the earlier balance of power and led to a counter-coup. Cleisthenes, who now ascended to power, responded to the increasingly strident demands for increased political participation by abolishing Solon's property-based division of political rights. He divided the citizenry into ten electorates (regardless of property-ownership), each of which elected 50 members to serve a one-year term on a Council of 500 which initiated the proposals to be placed before the Assembly of all free male citizens for approval. The members of the Council also performed a variety of executive and judicial functions which were assigned to them by draw of lots. An intensely participatory direct democracy was thus created, if only for that segment of the free male population that could afford to participate in the assembly and in public office. A final step was the extension of the right to military service: while only the *eupatrids* could serve as cavaliers (since only they could afford to maintain horses) and only the two next property classes as infantry *hoplites* (who had to pay for their heavy armour), the growth of the navy under the Peisistratids, Cleisthenes, and especially, later, under Themistocles opened up opportunities for the poorest citizens to serve as ship-builders, seamen and rowers (Kyriazis and Zouboulakis, 2004).

Over the century from Solon to Themistocles, there was thus a co-evolution of political rights and economic power parallel with the increasing specialization of Athens as an importer of grain, timber (for ship-building) and slaves and an exporter of olive oil, wine, fine pottery and marble from the famous quarries of Penteli, silver from the Laurium mines, wool, statuary and other craft products. Such a specialization required

1. a framework of law and courts that could protect non-agricultural property and mercantile contracts,
2. government investment in a navy to protect the vital Athenian trade routes,
3. public expenditure on harbour facilities,
4. a government monopoly of the coinage facilitated by government control of the Laurium silver mines,

5. above all, a power configuration that would permit a reduction in grain prices despite the losses this would impose on the large landowner.

All this could not possibly be accomplished by the landed oligarchy that dominated the kinship structure of Athens until the sixth century. But the constitutional transition of the sixth century – the abolition of the tribal organization of the state, the progressive extension of the franchise and the opening of public office to the entire citizenry – led to a very real devolution of power from the rich to the poor peasantry and to townsmen and traders: thus, after Pericles, power could pass in succession to a tanner, a rope-seller and a lamp-maker, all individuals without a direct stake in the land. The motive force behind this process was, we have argued, adaptation to the mounting pressure of population. It is important to note that each step in this process was gradual, incremental and possibly consensual, but that each major phase – Solon’s legislation, Peisistratus’s enfranchisement of foreign traders and craftsmen and Cleisthenes’s establishment of full democracy – was preceded either by the threat of revolt or by actual military conflict.

While no one disputes the fact of increasing population pressure, some have questioned the role of trade in the rise of Athenian democracy, citing the relatively small volume of Athens’s maritime trade at the beginning of the sixth century. This fact however does not weaken our argument at all: we have argued that the *potential* growth of trade (which could have relieved the population problem) was being held up by the oligarchic structure of Athenian politics before Solon and that his reforms as well as those of Peisistratus and Cleisthenes sought largely to break this bottleneck, with notable, if gradual, success. Of course, the social status of traders continued to be low, particularly among the landed oligarchy, long after the reforms (witness the disdain of aristocrats Plato and Aristotle for them); but to argue that this indicates that they were not important is like using the contempt of Jane Austen’s characters for those “in trade” as evidence that trade could not have been a major factor in the Industrial Revolution.

An alternative explanation of the growth of Athenian democracy runs in terms of a consensus between aristocratic cereal farmers and poorer hill-peasants whose land was more suited to olives (Fleck and Hanssen [2006]): both accepted that the growth of olive

cultivation would increase national income and (given the assumption that their preferences between public and private goods were similar) the utilities of both classes; both recognized that this was impossible unless the long-term investments required for olive production (because of the long gestation period of the olive tree) were protected from the threat of expropriation, a protection that could only be ensured by extending political rights to the olive-growers. This theory, however, does not quite explain the chronology of the reforms. Fleck and Hanssen mention changes in the technology of olive-growing in Athens, but these changes seemed to have been completed by the end of the eighth century BC, and one is therefore hard put to understand the hundred years that elapsed between them and the Solonic reforms. Nor is there any reason to believe that the different classes had similar preferences for public goods: indeed, one of the key events in Athenian history is the debate between the democrat Themistocles and the aristocrat Aristides on whether Athens should develop her navy or her army, a debate that ended in the banishment of Aristides, thanks to the fact that, since Cleisthenes, the poorer classes could outvote the aristocracy.

5. The Origins of Democracy in Britain

While the roots of British democracy go back at least to the English Civil Wars of 1642-51, we focus on the nineteenth century extensions of the franchise that made the House of Commons a truly representative body elected through universal adult male suffrage. We discuss therefore not an agrarian economy like Solon's Athens but one in which the Industrial Revolution has been in full swing for half a century and large clusters of population have already developed around major industrial towns. How did democracy arrive in this urban-industrial environment? Formally, the franchise was widened through the Reform Acts of 1832, 1867 and 1884 in response to widespread and continuing popular agitation which the government initially strongly resisted but was unable to check.

Up to 1832, property qualifications for voting ensured the domination of Parliament by the landed gentry. Crucial corollaries of this were a regime of high food prices (enforced through the Corn Laws that restricted grain imports in the aftermath of the Napoleonic Wars) and a government indifference to the provision of public goods that did not serve the landed

interest (such as urban infrastructure and public education). Meanwhile, however, the Industrial Revolution and the population explosion that accompanied it were driving up demand for food and crowding people into unsanitary cities ill-equipped with civic amenities and polluted by ‘the dark satanic mills’ that loom so large in nineteenth century English literature. Population rose by 3 million from 1800 to 1820 and by a further 5 million from 1820 to 1850, Urban growth peaked in the 1820’s with many towns growing in excess of 40% over the decade (M. E. Rose [1981]). Hunger and malnutrition mushroomed, crime multiplied, epidemics like cholera and typhoid struck with increasing frequency and ferocity, tuberculosis and other respiratory maladies became endemic, so that life expectancy, which had been rising steadily over the eighteenth century, stagnated in the nineteenth till the 1870’s (Szreter and Mooney [1998]). The inevitable consequence: a rising clamor for cheaper food and a more responsive state that would address the problems of an increasingly urbanized population. Some of this agitation spilled over into violent rioting. In its less strident form, it involved a convergence of interest between workers, merchants, manufacturers and townsmen in general in cheap food imports (that would improve living standards and reduce hunger, beggary and crime), in better sanitation, hygiene and civic infrastructure. The Reform Act of 1832, which increased the size of the electorate by more than 50%, mostly in the cities, encouraged efforts to abolish the barriers to grain imports and to increase expenditure on public health, water supply and sanitation.

The first major success of these efforts was the repeal of the Corn Laws in 1846. The immediate effect of this was the stabilization of grain prices through imports from Germany and Russia. The long term consequence of course was the stimulus to railway building in America and the opening up of its vast fertile interior to settled agriculture for export. The impact of this on world grain prices was felt only after the necessary gestation lag – in the 1870’s. As we shall see, the 1870’s constitute a major watershed in the economic history of Britain, indeed of much of Western Europe. Meanwhile, local public spending, essentially on public goods, began rising slowly as a fraction of all government spending from the 1830’s. Its growth accelerated in the 1870’s. Efforts to increase investment in public health facilities were made in the 1840’s and 1850’s, but with more success from the 1870’s.

The Reform Act of 1867 represented a bipartisan consensus, piloted by the Conservative government of Benjamin Disraeli. It more than doubled the electorate

essentially by enfranchising all adult townsmen (though not women). Finally, the Act of 1884 tripled the electorate again by extending the franchise to rural working men.

Acemoglu and Robinson [2000] argue that the motive force behind these Acts was the threat of revolution by the hitherto-disenfranchised poor who were now seeking a redistribution of wealth and income that could not have been achieved earlier by constitutional means. Certainly, the threat of revolt was very real, particularly in 1832. When the original Reform Bill of 1832, after passing the Commons, was rejected by the Lords, riots and arson broke out the same evening in Derby, in Nottingham, in Bristol, in Dorset, in Leicestershire, in Somerset (Rude [1967]). This may have had a major role in persuading the government to threaten to swamp the Lords with newly-created Whig peerages and thereby ensuring their acquiescence the second time around. The Hyde Park riot of 1866 following the defeat of the Liberal Reform Bill and the resignation of the Liberal government, though far less violent, demonstrated the large popular base of the reform movement and may well have persuaded the Tories to join the reform bandwagon. However, Lizzeri and Persico[2004] argue that government spending as a fraction of GDP did not rise at all over the nineteenth century (after allowing for war spending), that the proportion of welfare spending was actually halved and that total taxes as a fraction of GDP declined till 1870 and, even in 1900, remained far below its 1800 level. Of course, direct taxes and the progressivity of the tax system increased after 1870, but this remained a minor fraction of total revenue. All this does not indicate a commitment by the reformed governments to redistribution from the rich to the poor. Acemoglu and Robinson believe that the fact that the Gini coefficient peaked in the 1870's and fell thereafter indicates that the beginnings of redistribution coincide with the arrival of large-scale democratization. In the relationship they construct, though, there is an omitted variable – the precipitous fall in food prices from the 1870's and the consequent improvement in the real incomes of the poor.

Could the same variable perhaps have accounted for phenomena like the mellowing of the labor movement and its transition from revolutionary militancy to social democratic reformism – from Marx, as it were, to Bernstein? And did this dilution of class tensions lead eventually to the smooth passage of measures that increased the supply of local public goods (like the public health infrastructure) as well as those that were truly redistributive (such as

the rise in progressive direct taxation and universal free and compulsory education)? Certainly, it is plausible that it did.

In nineteenth century Britain, as in Archaic Athens, democratization was slow and gradual with concessions and compromises at every step. The reformers of 1832 certainly did not visualize full democracy as the culmination of the process they were initiating. Indeed, when Sir Francis Burdett introduced a bill calling for universal male suffrage, equal-sized constituencies and voting by secret ballot, it was laughed out of court, securing only two votes (May [1896]). The 1832 Reform Act abolished 143 ‘rotten boroughs’, but added 65 county (i.e. rural) constituencies, and while many of the abolished boroughs were ‘owned’ by the landed nobility, many others had been controlled by wealthy merchants. Further, the Act also enfranchised ‘tenants-at-will’ paying an annual rent of at least £ 50, a group that generally voted as their landlords desired (May [1896]). All these represented major concessions to the landed interest. Indeed, the Tories made significant gains in the ensuing elections of 1835 and 1837 and recaptured the Commons in 1841. The Lords too continued to have a powerful voice in legislation, forcing amendments on issues like municipal reform and Jewish emancipation (May [1896]). The Reform Act of 1867 likewise was in fact piloted by Disraeli and the Tories in the belief (mistaken as it turned out) that this would enable them to win the elections that followed.

6. Conclusion

We have modeled a society politically dominated by a landed oligarchy but driven by population pressure towards democracy. Central to this transition are a shift to non-cereal production and export, increasing food imports and a major role of international trade and urbanization. Where the potential for such a specialization existed (as in Archaic Athens), it appeared to be an attractive escape route from the increasing impoverishment and inequality of an overcrowded agrarian society. Where industrialization and urbanization are already well-established (as in nineteenth century Britain), the balance of economic power will already have shifted, facilitating the transition to a food-importing regime that sustained further industrialization and urbanization. The political corollaries of this process were the erosion of the constitutional power of the landed interest to block elements of this transition (through the Corn Laws for instance) or to prevent investment in the public goods that the

transition called for (such as harbor facilities and a navy in Athens and sanitation, public health and education in Britain). This implied a gradual process of democratization.

We have argued that democratization may in part have been driven by a threat of revolution. There is little evidence however that it aimed at, or led directly to, redistribution from the rich to the poor. The key differences between the agents in this process were not along a linear dimension like income, so that the median voter theorem had little relevance.

Further, in certain phases, democratization may have been the solution to a bargaining game in which the threat of revolution was not credible, where the increase in income and welfare under the new regime made possible side payments that persuaded the earlier stakeholders to accept the reforms. Evidence of this is the slow pace of the reforms and the many concessions made at each phase to the constitutional incumbents. Full democracy was never the objective of the early reformers. It arrived by slow evolution, almost by stealth, as part of a process of economic development.

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