Contested Accumulation in Capitalist States

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1. <u>Introduction</u>

How does contestation between groups affect distribution and accumulation in capitalist states? Perhaps the most striking feature of the modern capitalist nation-state is the relatively rapid and sustained accumulation leading to historically unprecedented increases in living standards. A similarly striking feature is the persistence of group-based hierarchies, where groups are defined broadly as collections of individuals with similar socially assigned traits such as race, gender and age. In this paper, I attempt to dialectically relate these features of accumulation and hierarchy. I argue that there are key institutions such as state intervention, social norms and social reproduction that cannot be fully commodified, and yet are necessary for accumulation. These institutions are contested by groups through states and organisations. I present a simple model that illustrates how people may ally into groups and contest these institutions, leading to a variety of trajectories of accumulation and distribution dependent on initial conditions.

This argument addresses the lack of a well-integrated theory of accumulation and hierarchy. Both the Neoclassical and Marxist theorisations of accumulation generally presume identical "agents" or "workers" with only ad hoc attention given to group hierarchies. This is partly because hierarchy is at odds with a core aspect of accumulation: competition is theorised in both literatures as a great force of capitalism that homogenises labour, maximises efficiency and drives accumulation.

Social Reproduction Theory (see Bhattacharya, 2017; Fraser, 2017) and Social Dominance Theory (see Pratto, Sidanius and Levin, 2006) theorise the persistence of group-based hierarchies in living standards today. I draw on these literatures in the sections that follow. Both the Social Reproduction and Social Dominance literatures tend to focus little on explaining why group-based rents are not competed away or diminishing with commodification, relying more on "non-capitalist" processes of evolution, violence or uncompetitive institutions. Of course, these processes are deeply present in capitalist societies today; however, if theories of accumulation focus on idealised capitalism while theories of hierarchy focus on uncompetitive capitalism, they

will largely talk past each other. When accumulation and hierarchy are theorised independently, we miss key insights as to how institutions of accumulation are contested to strengthen these hierarchies, and conversely how hierarchy influences accumulation.

My primary contribution is in reconciling these hierarchies with competitive capitalist accumulation by identifying important non-commodifiable institutions as sites of contestation: social reproduction, the state and norms. This builds on Folbre (forthcoming) who presents this argument in the case of social reproduction, where for example women's labour in giving birth cannot be fully commodified (children cannot be sold). Households may still work towards optimising efficiency, but this gives men and firms the opportunity to contest and appropriate women's labour. Such patriarchal domination is sustained under capitalist expansion because accumulation is dependent on the production of labour, despite its non-commodifiable nature.

I make a second contribution by illustrating how these institutions are plausibly contested by uncoordinated individuals across large societies. I focus on democratic political systems and organisations as transmission mechanisms which aggregate preferences. When taken together with the contested institution of norms such as ideology, this allows me to model endogenous preferences and thereby reproduce hierarchy through democratic systems in addition to material advantage. The importance of norms is recognised across the literatures on Marxism (consciousness), Neoclassical theory (preferences), Social Domination Theory (legitimising myths) and even Evolutionary Game Theory (conventions); yet they give little explanation of how these are formed, strengthened or linked back into material contestation. Endogenous preferences allow for agency to be dialectically related to structure, through upwardly and downwardly constitutive norms.

In the next section, I argue that social reproduction, state intervention and norms are important contested institutions that are non-commodifiable but necessary for accumulation. Section 3 briefly shows how these institutions can be contested to transmit advantage in an evolutionarily stable way, including conditions for instability or change in hierarchy. Section 4 describes how individuals communicate their preferences in contesting institutions, through democracies and organisations, with a model illustrating the latter. Section 5 brings these arguments together in a macroeconomic model of contested accumulation, with simulations illustrating trajectories of accumulation and distribution dependent on initial conditions and structural parameters. Section 6 critically discusses and concludes.

2. <u>Necessary, non-commodifiable institutions</u>

Group-based hierarchy is difficult to explain in Neoclassical complete markets because each factor is given its marginal product through competition, and therefore hierarchy cannot exist where differences in productive capability do not. The Coase Theorem extends this by showing that, under well-defined property rights and low transaction costs, bargaining will lead to a Pareto Efficient outcome even in the presence of externalities. A range of distributional outcomes are supported while preserving Pareto Efficiency, depending on the bargaining process and initial property rights which is itself an outcome of bargaining (Bowles, 2004). Bargaining is also central to the Marxist paradigm, where *class*-based hierarchy is reproduced as property owners have more bargaining power and can appropriate the labour of workers in the wage relation. For Marx too, this relation is dependent on the existence of private property, which can similarly be contested away through revolution.

Both these literatures allow for a central role of bargaining in accumulation. In particular, incomplete aspects of accumulation can be contested while still optimising efficiency. There is no universally optimal arrangement, even if some are worse than others, and this creates space for group-based hierarchy in the presence of efficiency-based competition. I am addressing the idealised market in this analysis, but in reality even complete aspects of accumulation are subject to contestation because of bounded rationality (e.g. long-term effects are difficult to judge), monopoly power or coercion.

I focus on three important institutions that are fundamentally incomplete and therfore non-commodifiable: social reproduction with externalities, state intervention as a monopoly, and social norms as non-contractible. I demonstrate that these institutions are necessary for accumulation, which is important for my broader argument of illustrating that contestation is a necessary condition for accumulation, and group-based hierarchy is thereby sustained.

Social reproduction. I outlined the basic argument in the introduction. Folbre (forthcoming) gives two sources that make reproductive work non-commodifiable. Firstly, raising children gives a positive externality that cannot be privatised. Secondly, investments of labour in reproduction (whether children, household maintenance, daily reproduction of wage-workers or the elderly) are personal and non-replicable, making it difficult to attribute outcomes to inputs. Much of our household work, from raising children to cooking and cleaning, remains outside of the market in

advanced capitalist countries. Folbre emphasises that unequal distributional arrangements in the household is not necessarily inefficient: a patriarchal arrangement may nevertheless improve overall efficiency through imposing discipline and improving coordination.

State intervention. North, Wallis and Weingast (2009) centre the state in their political economy theory of sustained accumulation, arguing that a state or government with a monopoly over violence and legislative power is characteristic of successful societies today. In the most conservative version of neoclassical economics, the state still plays an indispensable role in enforcing private property rights and mediating disputes. As Rodrik (2000) notes, private property is *never* an absolute institution as trade-offs with other rights are made, for example a property owner cannot unconditionally kill an intruder. Private property is a key institution that is contested by groups, since inheritance is a primary mechanism by which group-based hierarchy is preserved in a market economy (Darity, 2005). In South Africa, this is playing out in the land expropriation debates between political parties, lawmakers and protests as private farmland acquired by whites under colonial rule is being contested by the blacks that were dispossessed.

State intervention extends far beyond enforcing private property. States control substantial resources, for example about 30% of GDP in the cases of USA and South Africa. The state is relied on to provide public goods, such as roads, education and police. Moreover, with the success of developmental states with targeted industrial policy such as Korea and China, it has become untenable to justify a hardline against state intervention as was done by Krueger's seminal paper (1974) and the Washington Consensus. Ocampo, Rada and Taylor (2009) argue that *every* case of successful industrialisation, from Britain and USA to the Asian Tigers, involved heavy state intervention in private markets. There is a growing recognition among neoclassical economists of the role of states in coordinating economic activity in achieving dynamic efficiency, for example given by Lin's "neoclassical approach to structure and change" which allows substantial infrastructure and research investments, and targeted finance subsidies (2011, p194).

Rodrik (2000) argues that a diverse set of institutional arrangements can be optimal, as shown by the success of very different capitalist economies such as USA compared to Japan. Groups can contest where state resources are deployed while preserving efficiency, such as through which firms are given financial subsidies, who is employed in public services, and who are the primary beneficiaries of legislation.

Social Norms. By norms, I refer to non-contractible aspects of interactions such as trust, concepts of fairness, and default arrangements. Norms allow economic and social gains from coordination, and are therefore important sites of material contestation. In firm production, incomplete contracts are pervasive and result in strong dependence on norms (Bowles, 2004). For example, Akerlof and Yellen (1990) show that if groups have an associated wage norm, and people give effort partly based on fairness as judged by their wage relative to group norm, then the optimal wage is at the group norm. This group norm can be contested. Deference to authority also allows bosses to underpay workers (Simon, 1991), another norm with group-based distributional consequences depending on who is likely to be in positions of authority.

These three contested institutions of social reproduction, state intervention and social norms apply to material and non-material advantage, for example which areas are most protected by police or norms of beauty that differ by gender. The institutions also interact: patriarchy in social reproduction is strengthened through state-level anti-abortion laws that penalise women (Fraser, 2017), norms such as stereotypes held by state police contribute to the criminalisation of innocent blacks in USA (Pratto, Sidanius and Levin, 2006), and states can influence wage norms by setting minimum wages. These institutions account for a large portion of production, with multiple contested distributional arrangements that preserve efficiency. Next I address how these institutions are contested, leaving the question of how individuals contest as "groups" for section 4.

3. <u>Contestation and transmission of advantage</u>

The non-commodifiable institutions are contested directly by groups, for example men have more bargaining power from wage-work compared to women who engage in non-commodifiable reproductive work, and therefore extort greater benefits. Wealthy groups can lobby government officials through indirect bribes, or groups organised in trade unions can decide on a different wage norm (within bounds). I discuss two further ways in which groups contest, namely ideology and structural coercion.

Ideology. Pratto, Sidanius and Levin (2006) give a central role to "legitimising myths" in their review of Social dominance Theory. While I find this too narrow since it neglects the powerful role of material interests, it does demonstrate how ideology has strong consequences for group-

based hierarchies. Ideology is rarely addressed in the Neoclassical literatures, perhaps because it departs from the assumption that agents' preferences reflect their best interests. The behavioural economics literature recognises "bounded" rationality, including the disadvantage of poor people (Mullainathan and Shafir, 2013), but as with much of the mainstream, this literature focuses on exogenous causes of bounded rationality, and shies away from these bounds as a contested power relation.

Gramsci links ideology to material advantage through his concept of hegemony (Hall, 1987). The *consent* of subordinated groups in relation to dominant groups is manufactured by changing the preferences of subordinated groups. Our preferences are endogenous to our education, family upbringing, workplace habituation, media exposure, and parts of religion. Ideology can also be manufactured indirectly, through information. Even neoclassical political economy concedes the importance of information in forming beliefs or preferences, for example as an explanation for why people tend to vote against free trade even in cases of clear benefit from comparative advantage (Romer, 2012, p 605). Sometimes the information is not possible to procure, and ideology is needed to bridge this gap. Our material interests can be difficult to judge, especially over long time horizons or regarding indirect effects. Often economic policies are genuinely confusing.

We rely on information flows in the media, opinions of those around us (a form of norms), and the established historical narrative to judge our material interests - all factors that can be contested by groups. Concrete examples include the tremendous spending on advertising by firms and organisations like the National Rifle Association in USA.

Structural coercion. Preferences may also be shaped by structuring payoffs to actions such that subordinate groups opt-in to their inferior positions in the social hierarchy of living standards. I refer to this as structural coercion, which does not rely on some of the uncomfortably agency-removing implications of ideology. Examples correspond to norms, for example men may set higher wages for occupations they dominate such as finance and lower wages for occupations women dominate such as carework. Access to state institutions can also be differentially organised, for example whites may have more influence over political networks in setting favourable policies, and blacks may grudgingly accept this because of the benefits associated with state intervention.

Structural coercion is most easily demonstrated by the Evolutionary Game Theory modeling of norms, as in the assurance game of table 1. The key characteristic of norms is the externality imposed from other people's decisions: if everyone else follows a norm, the payoff is a lot higher for me to follow the same norm. This generates dependence on initial conditions through tipping points, and persistence, two features of group-based hierarchy that I am trying to explain. The figure alongside table 1 shows that if more than ⅔ of the population follows norm "adhere", the best response for the row player in the payoff matrix is to adhere. Since agents are identical, the same decision faces all agents, and the norm "adhere" persists. Usually, this illustrates how a norm can persist even in the presence of Pareto improvements. Here, if the norm was "defect" (fraction adhere is 0), an agent would have to convince at least ⅔ of the population to switch with her at the same time - despite the alternative norm having a higher payoff.

*Table 1: Payoffs for Assurance Game with identical agents*

	Adhere	Defect
Adhere	4,4	0,3
Defect	3,0	2,2

Payoffs to following norm
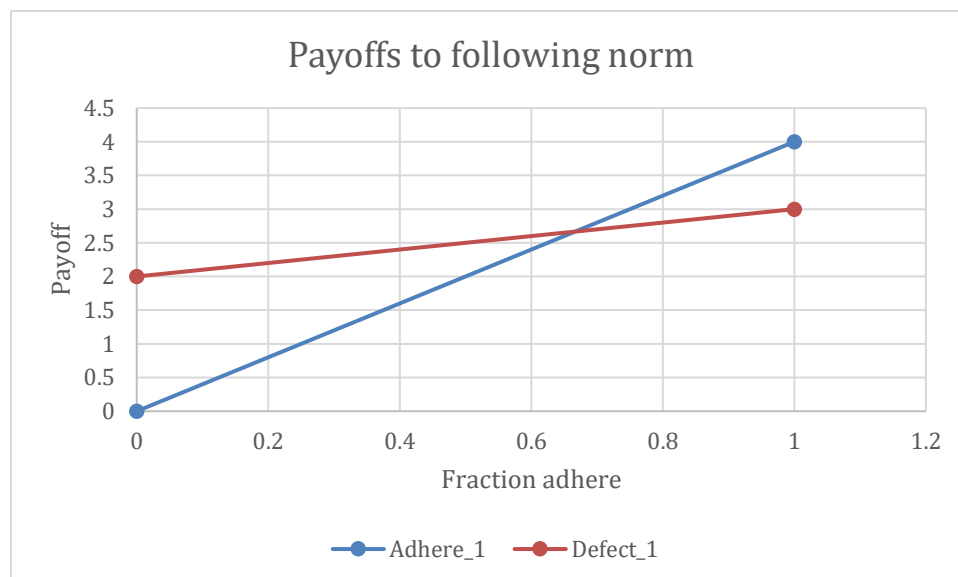
Group based contestation of structural coercion can be demonstrated if we depart from the usual assumptions of evolutionary game theory and introduce heterogenous agents. The stable structure of the game can be preserved while the payoffs are contested. For all agents in table 2, adhere is still the best response when everyone else is playing adhere. However, player 2 (column) payoffs are now much lower than column. Player 2 is *structurally coerced* into choosing adhere, because it is her best response even though the payoffs for the same action are higher under a different norm (if all defected) and her position is inferior for the same action. A range of payoffs under "adhere" will preserve the norm, allowing a broad set of contested institutional outcomes.

Table 2: Payoffs for Assurance Game with heterogeneous agents

	Adhere	Defect
Adhere	4,2	2,0
Defect	3,2	3,3
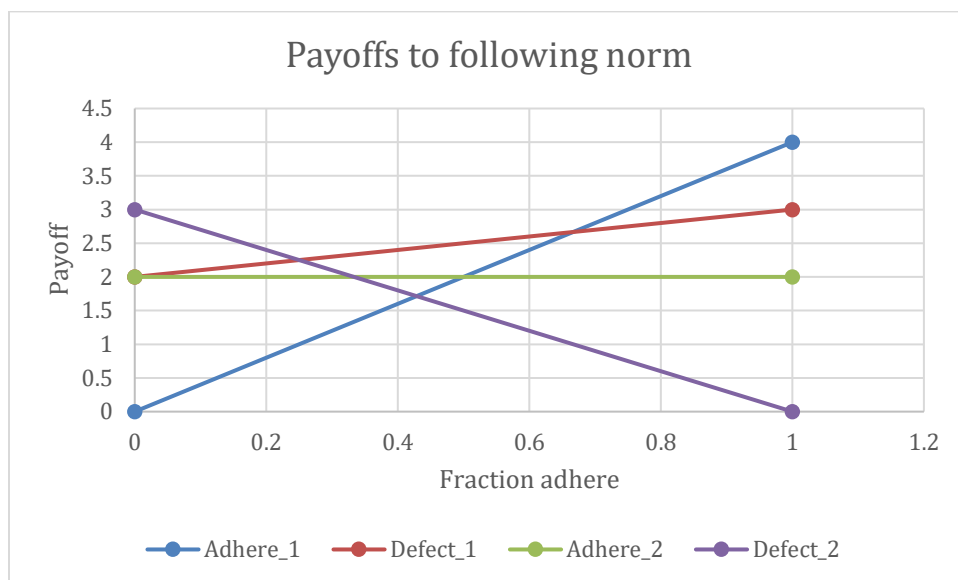
Through direct contestation, ideology and structural coercion, more powerful groups can reproduce their advantage. Is there any possibility of disruption? One source of instability is that the ideological and structural norms described in the previous section tend to erode with inequality. Inequality aversion and alternative options make us more likely to defect from a norm as inequality increases. This can produce cyclical instability in the model. For example, it may be rational for a dominant agent to push for more individual benefits given the social level of inequality, but all dominant agents face that choice and so inequality does increase. This externality leads to inequality rising beyond the level a rationally contesting group would allow it, triggering a possible revolt. On the other hand, this may simply trigger an opposing force from the other faction, meaning that inequality will settle down at a point while maintaining the hierarchy.

4. Transmission of power

Thus far I have treated contesting groups rather abstractly. Groups are alliances of individuals that share an interest based on a common trait, such as race, gender or class. Each individual is part of multiple groups based on their racial, gender and class identities. Groups can form coalitions, are fluid as for example racial categories change, and generally do not have an easy mechanism to convey the preferences of their members.

How then do these abstract groups contest the institutions above? Individuals could act in the interest of groups they belong to, through the mechanisms in section 3, but it is unclear why an individual would confer this externality to other group members when she could rather act to further her self-interest. A prominent direct mechanism is through voting systems. 58% of states in 2017 had consolidated democracies, and 84% had some degree of democracy (Desilver, 2017). As long as individuals vote in support of policies that favour their group interests, and political parties maximise their probability of election by fashioning policies according to group interests, group-based hierarchies can be maintained. In one-person-one-vote systems, minority group advantage can still be maintained through ideology (shaping the vote of subordinated group members, or of morally-motivated voters) and structural coercion (e.g. limit the set of political parties to cater only for the dominant group).

However, this explanation is unsatisfying regarding contestation of norms (which are not voted on) and even structural coercion implicit in minority group advantage in democracies.

Organisations provide a transmission mechanism by which individual interests aggregate into group-based contestation. Broadly defined, organisations are collections of individuals with similar interests, that, unlike my description of groups, are generally smaller and not abstract. They include independent media houses, community residential and school boards, as well as for-profit entities such as firms. North, Wallis and Weingast (2009) give a primary role to organisations in their political economy explanation of how and why advanced capitalist countries became wealthy. They show that richer countries have more organisations, and these organisations have allowed growth to be sustained rather than short-lived - the key difference between more and less successful countries.

While I have reservations about this explanation of economic development, I agree that organisations are an important feature of successful capitalist states. In some ways, non-profit organisations can be viewed as the social response to the non-commodifiable institution of norms. These are the political parties, community organisations and civil society advocacy fora which strongly influence moral standards and the socio-economic agenda.[1] Organisations are evolutionarily persistent under competition because they allow individuals to better contest the non-commodifiable institutions: organisations provide gains from cooperation and can also accumulate wealth, credibility and linkages with other organisations beyond the lifespans of their founding members. They reproduce group-based hierarchies through differential access. Wealthier individuals have better access because they can offer funding and better skills.

An organisation-based explanation of group contestation allows me to demand very weak assumptions on how individuals behave. People need not have *any* information about their group capability: the only requirements are that better off individuals have greater access to organisations, and that organisations pursue the interests of their members. In reality, these minimal requirements are even weaker because organisations typically display path-dependency. For example, even if whites have similar levels of wealth now, but historically were wealthier, whites today may still have better access through family members or organisations may still pursue white group interests because of past aims. This approach produces a model of norms that are constituted upwardly (individual preferences aggregate) and downwardly (organisations contest institutions that structure individual preferences).

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[1] This is a conjecture based on anecdotes. As commented earlier, it is difficult to find evidence of *how* norms are set, since the literature focuses on the implications of norms. In this conjecture that organisations are a primary influence on norms, it would be useful to gather quantitative evidence.

Setup of model.[2] There are two groups corresponding to identity type 1 and identity type 2, analogous to contestation between whites and blacks or men and women. This is a simplification of multi-group contestation. To build in the requirement that wealthier individuals have more access to organisations, I allow for each identity type to have an associated parameter, *rate*, which represents their ability to join organisations. An organisation is represented in this model as any group of individuals connected indirectly through "links". The left panel of figure 1 illustrates.

Every period, an individual is randomly paired with another individual and they form a link with probability proportional to the sum of their rates. Adding their rates is a shorthand to ensure that those with higher rates have better access to organisations, giving upwardly constitutive norms.

$$pr(form\ link) = \frac{1}{2} * (\ rate_1 + rate_2\ )$$

Downwardly constitutive norms are given through the feedback mechanism, in my argument represented by organisations that contest the non-commodifiable institutions that form the structure of all individuals' interactions. For simplicity, I focus on the influence of the organisation with the largest number of members. This organisation lobbies for the interests of its members by influencing the *rate* parameter (i.e. wealth, access to organisations). It does so successfully in proportion to each type in the organisation and the size of the organisation (bigger organisations are more powerful). For example, the rate of identity type 1 in this period is equal to its rate in the previous period (organisations engage with the historical structure), plus a term which increases with the proportion of identity 1 in the largest organisation (the first bracket) and increases with the size of this organisation (the second bracket). When there is an equal number of each type in the organisation, rates increase equally.

$$rate_{i,t} = rate_{i,t-1} + (\frac{\#\ members\ of\ type\ i}{\#\ total\ members}) * (\frac{\#\ total\ member}{\#\ total\ population}) * (1 - rate_{t-1})$$

I add a few harmless constraints to keep the model visually tractable. I constrain rates to be between -1 and 1 (the last bracket in the equation above). I also penalise the size of organisations to account for cooperative economies of scale, by randomly deleting a link between two members of the largest organisation once it passes a given "inefficient" size.

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[2] I adapt the model code from Wilensky (2005) and use the program Netlogo (Wilensky, 1999).

Discussion. The emergent property of this agent based model is that one "giant component" forms. As links are randomly generated, for two organisations to join only one member of each must be selected. Under equal rates, there is inconsequential. However, where rates differ by identity, the identity type with the larger rate will disproportionately form much larger organisations, and the feedback effect enhances this effect.

Figure 1: Organisations Model of Reproduction of Advantage
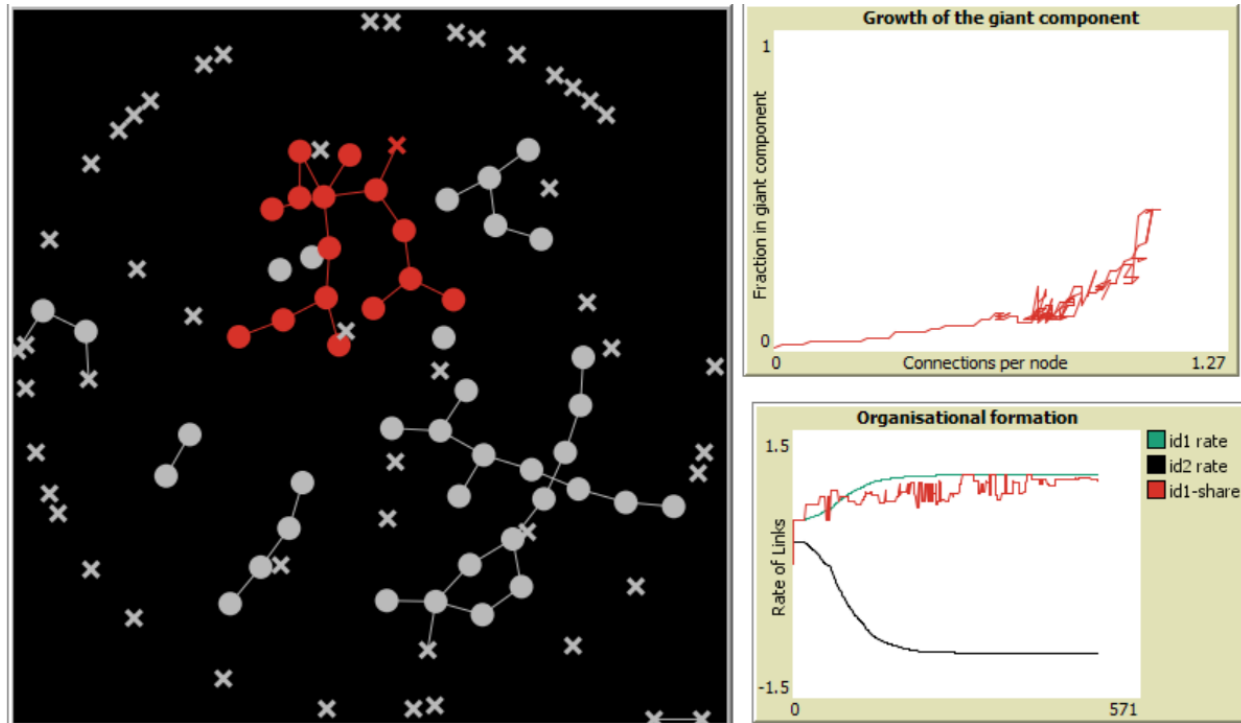
Notes: Circles denote identity 1, which was initially given a higher rate. Crosses denote identity 2. The largest component is coloured red.

Figure 1 shows a simulation where identity type 1 (circles) is given a higher initial rate. The lower right panel illustrates the feedback effect: the higher initial rate of identity 1 results in the largest organisation having more identity 1 members in period 1, leading to a slight increase in the identity 1 rate in period 2, leading to an even larger share of identity 1 members in the largest organisation in period 2, and so on. The rates of the two identities diverge. The probabilistic nature of the process is illustrated by how erratic the share of identity 1 in the largest organisation is (id1-share), even when the rates of the types are near their limits. The upper right panel shows how the size of the largest organisation remains limited in size.

The potential for instability is given by the randomisation. When initial advantage is given to identity 1, there is a chance identity 2 "gets lucky" at the beginning and reverses the result above. However, there is path dependency: as time progresses, it becomes less likely that randomisation can reverse the group-based hierarchy. I simulate the process 50 times with equal numbers of each type, giving identity 1 a slight advantage with a rate of 0.3 compared to identity 2 with a rate of 0.25. This produces a disproportionately large difference in the percentage of simulations that identity 1 dominates, 65% of the time. As expected, the chance that identity 2 gets lucky decreases as initial inequality increases; when initial conditions are equal, a result either way is as likely.

The disproportionate impact of initial advantage sets a basis for how even minority groups can be likely to achieve group dominance in an evolutionarily stable way. I simulate the process 50 times again, this time with the total population constituted of a third identity 1, two thirds identity 2. Despite being in the minority, a large initial advantage (0.8 rate compared to 0.2 rate) produces a similar result to above: identity 1 dominates 64% of the time.

The key contribution of this model is that it imposes extremely weak, plausible behavioural assumptions while still resulting in group-based hierarchies. Note in figure 1 and the model equations that organisations are open, not restricted to one identity. The results would be even stronger under the plausible assumption that people joined organisations that furthered their interests, rather than randomly as in the model. There remains an assumption that organisations know what their members' interests are; however, with the limit to organisational size, transmission of information is a weak requirement. The model I present in the next section depends on similar feedback mechanisms, but is more general in that it incorporates accumulation and multi-group contestation.

5. A model of contested accumulation in capitalist states

I bring together the insights of the previous sections in a dynamic macro-economic model depicting accumulation and distribution under group-based contestation. The key components of the model are a growth equation and a group-contestation equation. The model illustrates the importance of initial conditions and structural characteristics of the society, and produces group-based hierarchies under accumulation.

Setup of model

To integrate accumulation and hierarchy, I need to introduce class identity. In addition to the fixed identity as in section 4, everyone has a fluid class identity: the richest subset are bourgies, and the rest are workers. For example, a person may be identity 1 and bourgie. If they fail to accumulate enough in the next period, that person may become identity 1 and worker. The exhaustive set of possible identity combinations is "identity 1 and bourgie", "identity 1 and worker", "identity 2 and bourgie", and "identity 2 and worker". This gives four groups, and each person belongs to two of these groups: identity 1, identity 2, bourgie and worker.

Growth equation. Production occurs through capitalist relations. Only bourgies can invest their wealth in production. They receive profits proportional to their wealth at a return *r*. That is:

$$\pi = r * wealth_{bourgies}$$

The simple growth equation can be derived from the dynamics of the Solow growth model standard in neoclassical macro-economics (Romer 2012). The usual growth equation is given by $\dot{k} = sf(k(t)) - (n + g + \delta)k(t)$. If n and δ are 0 (fixed population and no depreciation), then in equilibrium $\dot{k} = 0 \rightarrow \widehat{K} = g$ and the capital stock which the bourgies own will grow at a constant rate (above, r).

The profits π are "taxed" at rate *t*. Bourgies retain $(1 - t)\pi$ for themselves. $t\pi$ represents the pool of resources that correspond to the contested non-commodifiable institutions of section 2. For example, they can be taxes that accrue to the state and are contested in the form of direct benefits or favourable policies. They can also be norms of wages, where identity 1 workers ensure a higher wage and add this to their wealth.

Group-contestation equation. In this simplified model, only one of the four groups above (identity 1, identity 2, bourgies, or workers) can "dominate", or successfully contest the non-commodifiable institutions. In determining which group dominates, I simplify the arguments of sections 3 and 4. A group *g* is more likely to dominate if it has more members, reflecting democracy (the first term in the equation). It is also more likely to dominate if it has more collective wealth, reflecting organisational influence through lobbying, ideology or structural

coercion (the second term). The weighting between the two is given by the parameter "democracy" and depends on the society's quality of democratic institutions.

$$pr(dominate_g) \propto democracy * (\frac{members_g}{population}) + (1 - democracy) * (\frac{wealth_g}{total\ wealth})$$

Since only one group wins, the group with the maximum probability calculated above claims the prize of $t\pi$ for its members. Because its members have greater wealth, and the probability of a group dominating is proportional to its members' wealth, the feedback mechanism of the model in section 4 is preserved.

However, two sources distinguish the dynamics of this model from the model in section 4. Firstly, since each person belongs to two groups, the feedback mechanism above partially empowers another group. Secondly, as bourgies claim $(1 - t)\pi$ every period, the dominant group is constantly threatened by the bourgie group which grows in wealth and becomes more likely to dominate.

The dynamics of the model are as follows. Each bourgie increases her wealth by the after-tax profit rate divided across bourgies, each member of the dominant group increases her wealth by the taxed profit divided by the number of dominant group members, and members of other groups have the same wealth as before. If someone is both a bourgie and a member of the dominant group, then she will receive both streams of income in the period.

$$wealth_{bourgsie,t} = wealth_{i,\ t-1} + (1 - t) * \frac{\pi}{number\ bourgies}$$

$$wealth_{dominant,t} = wealth_{i,\ t-1} + t * \frac{\pi}{number\ dominant}$$

$$wealth_{non-dominant,t} = wealth_{i,\ t-1}$$

To keep the model tractable, I have made many drastically simplifying assumptions that I critically discuss in section 6. In summary: The exogenous variables in the model are the tax rate *t*, the profit rate *r*, the proportion of the population that is bourgie, the proportion of the population that is of identity type 1, and the degree of democracy. I also exogenously ascribe initial wealth advantage to identity 1, identity 2 or neither to give explore path dependency.

The endogenous variables of the model are the evolution of wealth for different factions. The model may be solved analytically, but this is particularly difficult for the contestation of benefits between groups. Instead, I run simulations for 1152 permutations of the exogenous constraints, allowing 10 time periods in each simulation (more time periods do not qualitatively change the results, though they do change the *levels* of wealth for each group). I set the exogenous variables such that the proportion of the population that is bourgie is very low, and that the proportion of the population that is of identity 1 is a minority.

Results and Discussion

In table 3, the exogenous variables are the regressors and the endogenous variables are the outcomes. The trajectories of accumulation and distribution are summarised by the growth[3] and inequality[4] variables. As this is a simulation, the regressors are strictly exogenous and therefore the coefficients and standard errors are unbiased; however, I do assume additive effects, which is a severe limitation.

I start with the first row, the effect of a change in the profit rate *r*. In this model, growth comes from capitalist production. As expected, an increase in the profit rate has strong positive effects on growth, with a coefficient greater than 1 representing the feedback effects in the form of retained profits which allow the bourgeoisie to invest more. Profits accrue first to the bourgeoisie (note how much larger the effect of growth on bourgeois wealth is), who form a minority of the population, so inequality is driven up. Other groups also benefit from growth on average. However, in actual simulations, a group is often left out of growth completely if they never dominate.

The second row shows that an increase in the tax rate is most beneficial to worker average wealth, who usually either directly or indirectly increase their incomes through the dominant group because they are the majority of the population. This correspondingly decreases inequality because workers are always poorer than bourgies, by definition. The effect of the tax rate on growth is positive, but as I explain later this is purely an effect of the additive regression model.

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[3] Measured by the change in total wealth
[4] I measure this by the coefficient of variation between all members of the population. This measure, like the Gini coefficient, is strongly Lorenz consistent. It satisfies reasonable behaviour of an inequality function, such as scale independence.

When the proportion of bourgeoisie increases ("% Bourgie" or row 3), more resources accrue capitalist returns and growth increases. Because there is less market concentration, profit is distributed among a larger portion of the population and inequality declines. The minority ID2 benefits the most: as bourgies increase, it becomes more likely that an alliance between ID2 and bourgies transpires. For example, if group ID2 contains all bourgies and the rest workers, group ID2 benefits from feedback effects through both taxed profits and after-tax profits. Curiously, the proportion ID1 (row 4) makes little difference, with coefficients that are small in magnitude and insignificant.

Table 3: Regression results for simulations of contested accumulation

	(1) Growth	(2) Inequality	(3) Log Wealth ID 1	(4) Log Wealth ID 2	(5) Log Wealth Bourgies	(6) Log Wealth Workers
1. Profitrate	1.549***	3.477***	11.18***	17.98***	22.31***	13.34***
	(28.50)	(24.19)	(15.90)	(24.59)	(32.22)	(17.97)
2. Taxrate	0.366***	-0.217***	2.550***	4.565***	5.080***	5.482***
	(16.84)	(-3.78)	(9.07)	(15.60)	(18.35)	(18.46)
3. % Bourgie	0.961***	-2.807***	5.548***	15.29***	10.64***	9.911***
	(7.91)	(-8.73)	(3.53)	(9.35)	(6.87)	(5.97)
4. % ID 1	-0.00252	-0.0207	3.195*	-2.763	0.333	-0.120
	(-0.02)	(-0.06)	(2.03)	(-1.69)	(0.21)	(-0.07)
5. ID 1 adv	0.0153	0.616***	2.981***	-0.245	1.368***	0.0675
	(1.03)	(15.64)	(15.49)	(-1.22)	(7.21)	(0.33)
6. ID 2 adv	0.00904	0.330***	-0.804***	1.163***	1.401***	1.043***
	(0.61)	(8.38)	(-4.18)	(5.81)	(7.39)	(5.13)
7. Democracy	-0.00656	-0.175***	0.357	0.347	-0.146	0.717***
	(-0.44)	(-4.43)	(1.85)	(1.73)	(-0.77)	(3.53)
8. PublicInvest	0.323***	0.629***	2.387***	3.682***	4.407***	2.835***
	(26.62)	(19.56)	(15.19)	(22.51)	(28.47)	(17.08)
constant	-0.443***	0.674***	-3.906***	-5.811***	-5.626***	-5.639***
	(-14.01)	(8.05)	(-9.55)	(-13.65)	(-13.96)	(-13.05)
N	1152	1152	1152	1152	1152	1152

Initial advantage to either identity type (rows 5 and 6) strongly increases inequality, with negligible effect on growth. When initial advantage is given to the minority identity 1, this type forms the bourgeoisie and can maintain control more easily because their wealth is growing through both production and redistribution. Observe the coefficients of the initial advantage regressors for the wealth of workers (column 6): when initial advantage is given to the minority, some workers of identity 1 still benefit, offsetting the effect on identity 2 worker wealth. On the other hand, when initial advantage is given to the majority, workers benefit much more and the only faction that loses out is the minority identity.

The degree of democracy (row 7) increases the probability that a larger group will dominate. Since bourgies become less likely to dominate, inequality decreases as expected and the wealth of workers, who are the biggest group on average increases.

Finally, I introduce another variable into the model (I refrained from doing so earlier to keep from complicating it). As is, growth can only come through bourgies; yet, in section 2 I argued that the developmental state is an important engine of growth. Instead of groups contesting $t\pi$, let the state retain ½ $t\pi$ in a sovereign wealth fund each period, and groups only contest the remaining ½ $t\pi$. Like bourgies, the state invests its capital, creating a new growth equation:

$$\pi_{industrial\ policy} = r * (wealth_{bourgies} + sovereign\ wealth\ fund)$$

The "PublicInvest" variable in row 8 is a dummy indicating this new growth equation. It gives strong positive effects on growth and all levels of income, since it allows returns on resources that were previously redistributed. However, it also drives up inequality: public investment effectively acts as a subsidy to the bourgeoisie at a given tax rate. Late industrialisers such as China have grown tremendously through public investment, but while increasing inequality. One strategy is to increase public investment as well as the tax rate, which spurs growth but stabilises inequality. It also changes the sign of the tax rate. As noted earlier, the tax rate actually has a negative effect on growth without industrial policy. With industrial policy, a higher tax rate translates into more investment and therefore faster accumulation.

Next, I look directly at which group dominate. Table 4 gives the effect of the exogenous variables on the probability a group dominates. Recall that dominance is an increasing function of group wealth and population share. The profit rate, which accrues directly to bourgies,

increases their probability of dominance and has the opposite effect on workers. Similarly for a higher proportion Bourgies or ID1 which increases bourgie population share. As before, rows 5-6 show that initial advantage persists. The weighting between group wealth and population share is given by the degree of democracy, with more democracy giving a higher probability of worker dominance as population share matters more. Interestingly, public investment increases the probability of bourgeois dominance slightly, through increasing their wealth. This highlights the danger of an industrial policy strategy with a low degree of democracy: the bourgeoisie can co-opt the state while excluding the rest of the population.

Table 4: Impact on the probability of a group dominating

	(1) ID1	(2) ID2	(3) Workers	(4) Bourgies
1. Profitrate	0.0764	0.476***	-0.340***	0.295***
	(1.49)	(4.69)	(-3.55)	(5.08)
2. Taxrate	0.0806***	-0.132**	-0.169***	0.00139
	(3.94)	(-3.25)	(-4.42)	(0.06)
3. % Bourgie	-0.278*	2.899***	-4.097***	0.399**
	(-2.43)	(12.77)	(-19.10)	(3.08)
4. % ID 1	0.625***	-2.795***	3.368***	-0.191
	(5.47)	(-12.31)	(15.70)	(-1.47)
5. ID 1 adv	0.146***	-0.237***	-0.0391	0.0859***
	(10.41)	(-8.52)	(-1.49)	(5.40)
6. ID 2 adv	-5.77e-16	0.112***	-0.201***	-0.0365*
	(-0.00)	(4.03)	(-7.63)	(-2.29)
7. Democracy	-0.120***	-0.164***	0.302***	-0.185***
	(-8.55)	(-5.90)	(11.50)	(-11.63)
8. PublicInvest	0.0104	-0.0191	-0.0104	0.0712***
	(0.91)	(-0.84)	(-0.49)	(5.48)
constant	-0.0391	0.775***	0.510***	0.0277
	(-1.31)	(13.12)	(9.14)	(0.82)
N	1152	1152	1152	1152

Despite being the majority of the population, workers rarely dominate (6% of the simulations). The logic is that since wealthier factions are more likely to dominate, it helps to have at least some bourgeoisie in your faction, and so workers of identity 2 (who form the majority of workers) rather vote with their identity. 60% of simulations had identity 2 dominance. On the other hand,

insofar as the bourgeoisie are much richer and this determines political dominance, 30% of simulations had bourgeoisie dominance. The coefficients on degree of democracy illustrates this: as bourgie wealth becomes less important for domination, identity-based alliances become less beneficial.

In summary, accumulation and distribution trajectories are conditional on the structure of the economy as given by the profit, tax, and public investment policies. Distribution is particularly affected by the degree of democracy and initial conditions. Under plausible assumptions of a modern political economy, the model generates persistent differences in outcomes by identity, including total exclusion in a prosperous economy (such as workers of the losing identity faction). Some implications for more equitable, prosperous accumulation are shared (increase the degree of democracy), others are more controversial (distribution influences accumulation, identity differences will remain as long as *wealth* - not income - is unequal), and there are some surprising effects (effects of public investment and tax rates).

6. <u>Discussion and Conclusion</u>

My model in section 5 has many shortcomings. Firstly, it is uncomfortably close to new Keynesian DSGE models in that it relies on "exogenous parameters" that are also contested: the tax rate, level of public investment, and the degree of democracy are all contested by groups. My approach of simulating variations of each parameter is severely compromised by the additive nature of the regression model. The example of the PublicInvest dummy which interacts with the tax rate to change the latter's sign shows the importance of interactions. A better model would include interactions of all variables, though this becomes intractible.

Secondly, the model assumes that only one group can dominate. In reality, coalitions are built between groups; moreover, group identities are themselves constructed. Both aspects can be modeled in a similar way to the group-contestation equation. For example, coalitions of groups can also be assigned a probability of dominating; there should be some penalty built in to larger coalitions, since the payoff for members becomes a lot smaller and divisions within coalitions will make coordination more difficult. The construction of identities can similarly be simulated. Cooper (2000) argues that difference is *produced* in the long run, based (at least partly) on material interests. Race is useful for norms that differentially allocate rights and that establish

hierarchies, allowing the type of norm-shifting discussed in section 4. A simple version of this can be modeled as coalition-building with long term effects if the coalition persists.

Thirdly, the model should ideally be developed into a more complete macroeconomic model that accounts for a production function with labour (not just capital), a social reproduction function, and supply and demand constraints. The heterogenous assurance game of section 3 and the organisational model of section 4 could be explicitly tied in, where the main gain is endogenising the tax rate, public investment and degree of democracy. Finally, the main model of section 5 can be tested with cross-country and historical data on the exogenous variables – though with caution, given the shortcomings above.

Despite these shortcomings, I believe that the arguments in this paper and the model in section 5 are a reasonable first attempt at addressing a damaging lacuna in the economics literature. Neoclassical and Marxist approaches have both struggled to integrate sustained accumulation with the persistence of group-based hierarchies in a dynamic framework. I argue that important non-commodifiable institutions such as social reproduction, state intervention and social norms are necessary for accumulation. Groups contest these institutions and reproduce their advantage through direct lobbying, ideology and structural coercion. Although groups are abstract in relation to individuals, democracies and organisations allow the upward aggregation of individual preferences and the downward structuration of these preferences, resulting in group-based contestation even between uncoordinated individuals. This framework and its modeling in section 5 produce the insight that it is not accumulation that reduces group-based hierarchy, but democracy and active contestation of the institutions governing accumulation. The massive gains by feminist, black and other human rights movements over the last centuries have been won by protests, and did not come as a consequence of growth.

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