Globalization and Civil War[1]

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Abstract. A simple model of trade and appropriative civil war is framed to address questions of the relationship between globalization and civil violence. Two mutually reinforcing forces arise: Civil war chases capital and jobs away, decimating the local economy; and the lack of jobs makes it easy for contenders in civil war to recruit soldiers. Thus, was feeds economic underperformance, and economic underperformance feeds war. Among the conclusions are that the system is prone to abrupt discontinuities in equilibrium, so that a small change in the international environment can lead to sudden beginning or end of a destructive civil conflict; multiple equilibria are common; and globalization can make war either more or less likely, depending on the *type* of globalization.

[1]I am grateful to seminar participants at the University of Virginia and the North East Universities' Development Conference for comments. A special thanks goes to Pedro Dal Bó.

Civil war is endemic in large parts of the Third World. While some such conflicts are of course caused by ethnic or other non-economic factors, a growing body of research has identified links between economic factors and civil conflict. For example, a pioneering study by Collier and Hoeffler (1998) examined the effect of per capita income and primary commodity dependence on the likelihood of conflict. To summarize an important strain of the argument, civil wars often take the form of wars of pillage, effectively a contest over control of some important economic resource, usually a tradable primary commodity.

Competition over resource rents as a partial or sole root of civil violence has been observed in a wide variety of tragic conflicts. The importance of diamonds in recent civil wars in West Africa is well documented; Sierra Leone's ambassador to the United Nations even said of his own country's war in 2000: "The root of the conflict is and remains diamonds, diamonds, and diamonds." (Renner (2002, p.22)). War in the Congo was fueled by conflict over many mineral resources, including coltan, a crucial component of electronic devices such as cellphones, and which could be mined by soldiers sifting the mineral out of the surface mud (Renner (2002), p. 51). The Biafran war in Nigeria in the 1970's had control of oil-rich territory at its heart. The disastrous civil conflicts in El Salvador in the 1930's have been attributed to a rise in the value of coffee-growing lands, and consequent competition for them between Indians and whites (North, 1981, pp. 35-9). Ross (2004) shows the effect of commodities on civil war through a long list of case studies. A survey of many examples in the popular press is found in Fishman (2002), and a survey of many of these issues is found in Collier (2000b).

This paper offers a theoretical analysis of the link between international trade and the problem of economic civil war. This link is emphasized fervently by some critics of globalization,

who argue that globalization itself is responsible for much of the current prevalence of war in the world ('...the freeing up of world financial markets and world trade has spread an epidemic of violence,' in the words of Fishman (2002, p.41)). The link has received some formal attention as well. For example, Collier (2000) examines economic civil war as the outcome of a general-equilibrium model that emphasizes strategic interaction between the government and a rebel group that wishes to steal a primary commodity resource. A key variable is the value of the primary commodity resource, which is of course affected by world markets.

The present paper follows ideas in the literature, but emphasizes a mechanism that has not been emphasized yet. The argument is that two forces reinforce each other. First, weak demand for unskilled labor promotes civil violence, by providing abundant cheap labor for opportunistic insurgent groups to hire. Second, violence *leads to* weak labor demand, by chasing away footloose foreign capital and promoting capital flight among domestic citizens, thus hollowing out the manufacturing sector. Thus, *a shortage of jobs promotes war, but war also causes a shortage of jobs*. The mutually reinforcing nature of these two forces leads to multiple equilibria and to dramatic discontinuities in a simple open general equilibrium model, which do not seem to have been discussed in other work but that may be important in practice.

Both of these forces have ample empirical support. For the first force, the opportunity cost of participating in war has been argued by many authors to be a crucial determinant of whether or not war will occur. Initial evidence on this comes from Collier and Hoeffler (1998); Fearon (2005) provides a further exploration and critique. Miguel, Satyanath, and Sergenti (2004) show that a weak economy (instrumented for by rainfall) leads to greater risk of civil war in sub-Saharan Africa. Anecdotally, Bradsher (2002) describes how a boom in employment due to tuna killed off several guerrilla movements in Mindanao, in the Phillippines. For the second force, Abadie and

Gardeazabal (2003) show that separatist terrorist violence in the Basque region of Spain had large negative effects on economic growth in that region and large negative effects on the returns to firms that did business there. Blomberg et. al. (2006) show evidence of feedback effects from civil war to the economy for a panel of countries.

Theoretical approaches to the economic roots of conflict have been formalized by a number of authors; Skaperdas (1992) offers a well-known example with many references. Approaches focussing on the problem of civil war include Grossman (1999), Collier (2000a), and Wick (2008), as well as others. Most work in this vein has not emphasized the role of trade or relative prices in general equilibrium. One exception is Dal Bó and Dal Bó, which shows that incentives for conflict over productive resources can be affected by trade through Stolper-Samuelson effects, which affect both the opportunity costs to, and the possible rewards of, predatory conflict. (Panagariya and Shibata (2000) and Skaperdas and Syropoulos (2001) study the relationship between trade and war *between* countries.)

In more detail, the heart of this paper is a simple trade model with the following elements: (i) An exportable primary resource, which can be stolen through organized violent conflict. (ii) Free entry by 'warlords' into competition for this resource. (iii) Agriculture and manufacturing compete with war as sources of employment for labor. (iv) The demand for manufacturing workers is sensitive to the prevalence of violence. We can interpret this as the problem of 'stray bullets' raising manufacturing costs. Since most of the countries of interest are small, we assume a small open economy and take the world prices of the tradeable goods as given. It is useful to speak in terms of 'border prices,' which (for a given world price) will rise for exported goods and fall for imported goods when trading costs fall.

With these elements together, we find that *ceteris paribus*, a sufficiently high border

price for the tradable resource guarantees civil war, while the opposite condition guarantees peace. (All statements made for the border price of the tradable resource hold in the opposite direction for manufactures.) In the intermediate ranges, however, it is possible to have two equilibria, one with devastating war that drives manufacturing out of the country, and the other with a robust manufacturing sector that bids the workers away from war and prices the warlords out of business. For this reason, it is possible, as the system moves from one region of the parameter space to another, that a small change in border prices will set off a dramatic change in outcomes. In addition, an improvement in the country's terms of trade can have profoundly perverse welfare implications, by plunging the country into the maelstrom of a ruinous internal war. We conclude that globalization can indeed have ruinous effects on a country's welfare by promoting violence, but the *kind* of globalization is key. Globalization that makes it easier to find markets for conflict diamonds, for example, has perverse and violent effects, while globalization that makes it easier to establish manufacturing in a country prone to civil violence, and to export the manufactures to first-world markets, has the opposite effect. In this regard, the analysis suggests a very positive role for initiatives such as the US Africa Growth and Opportunities Act and the EU's Everything But Arms initiative, well beyond the usual pure economic effects that they may have.

1. The Model.

The elements of the model are as follows. There is a fixed supply of homogenous labor, $\bar{L}$, which can be used in the agricultural sector, manufacturing, or in the service of warlords. There is an extractable resource, whose border price is P^D (think of 'diamonds'). The border prices of agriculture and manufactures are denoted P^A and P^M respectively. These prices are taken to be

exogenous, and agriculture is the numeraire, so $P^A \equiv 1$. There is a fixed unit supply of the resource, and it requires no labor to extract. The country's total supply of labor is L, and the workers are mobile across the three employment sectors.

Agricultural goods are produced with a concave constant-returns-to-scale production function $F(L^A, T)$, where L^A is the labor employed in agriculture and T is the fixed supply of land. This gives a labor-market equilibrium condition $F_1(L^A, T) = \omega$, where ω denotes the wage and a subscript indicates a partial derivative. For any given value of ω, solving this condition for L^A yields the demand for agricultural labor, $L^A(\omega;T)$, a decreasing function of ω. Assume that $L^A(\omega) \to 0$ as $\omega \to \infty$ and that $L^A(\omega) \to \infty$ as $\omega \to 0$.

Manufactures are also produced with constant returns to scale, using capital and labor, with the unit cost function given by $c^M(\omega, r, L^W)$, where r denotes the cost of capital and L^W denotes the total number of workers (that is, soldiers) employed by warlords, and thus the extent of fighting. The open-economy setting requires that r be equal to the exogenous return on capital, r^*, on world markets in order for footloose capital to be supplied to this economy. The function c^M is strictly increasing in its third argument, capturing the 'stray bullets' problem – *ceteris paribus*, a rise in violence raises the cost of doing business.

Denote by $\tilde{\omega}^M(P^M, r^*, L^W)$ the solution for ω of $c^M(\omega, r^*, L^W) = P^M$. This is the reservation wage for manufacturers, above which they will not hire. It is clearly increasing in P^M, and decreasing in r^* and L^W.

We will focus on the following special case. Suppose that the technology of production in manufacturing is Leontief, with a_L units of labor and a_K units of capital required for each unit of output. Suppose in addition that if there are L^W soldiers active in the warlord sector, a fraction L^W/L^* of manufacturing output is lost to stray bullets, where L^* is a positive constant, as

long as $L^W \in [0, L^*]$. If $L^W > L^*$, then no manufacturing output is possible. With this technology,

$$c^M(\omega, r, L^W) = \frac{(\omega a_L + r a_K) L^*}{L^* - L^W},$$

so

$$\tilde{\omega}(P^M, r, L^W) = \frac{P^M}{a_L} \frac{(L^* - L^W)}{L^*} - r \frac{a_K}{a_L}.$$

If there are n warlords competing for the resource, and each warlord j employs a force of L^j workers, then the fraction of the resource that warlord i will win is given by $\phi(L^i)/[\sum_{j=1}^{n} \phi(L^j)]$, where ϕ, $\phi' \geq 0$; $\phi'(0) = 0$; and for some $L^{inf} > 0$, $\phi''(L) > 0$ for $L < L^{inf}$ and $\phi''(L) < 0$ for $L > L^{inf}$. The value L^{inf} is a point of inflection, which provides for some indivisibility in warfare, with the result that a finite number of warlords will enter, each with a finite size army. Each warlord hires soldiers, paying them their opportunity wage, to maximize profit. Free entry into warlordism results in zero profits in equilibrium for all of them.

Given this structure, an equilibrium can be defined as follows. It is a value for L^W, n, and ω such that the following hold. (i) Setting L^i equal to L^W/n maximizes $P^D \phi(L^i)/\{[\phi(L^i) + (n-1)\phi(L^W/n)]\} - \omega L^i$ (profit-maximizing warlords). (ii) Either entry by a warlord is unprofitable and $L^W = 0$, or $P^D/L^W = \omega$ (the free-entry condition). (iii) Either $L^W + L^A(\omega; T) < L$ and $c^M(\omega, r, L^W) = P^M$ (in which case the manufacturing sector is functioning), or $L^W + L^A(\omega; T) = L$ and $c^M(\omega, r, L^W) \geq P^M$ (in which case the manufacturing sector has shut down).

Of course, 'war' is an equilibrium with $L^W > 0$, while 'peace' is an equilibrium with $L^W = 0$.

It is useful to divide the uses for labor into the 'productive sector,' consisting of agriculture and manufactures, and the 'non-productive sector,' consisting of violent warlordism. We will first examine the demand for labor by the productive sector, then examine the supply of labor to the productive sector (the residual of labor supply net of the demand by warlords), then examine the equilibria of the system as a whole.

2. Demand for labor in the productive sector.

Suppose for the moment that we know for exogenous reasons that there will be no

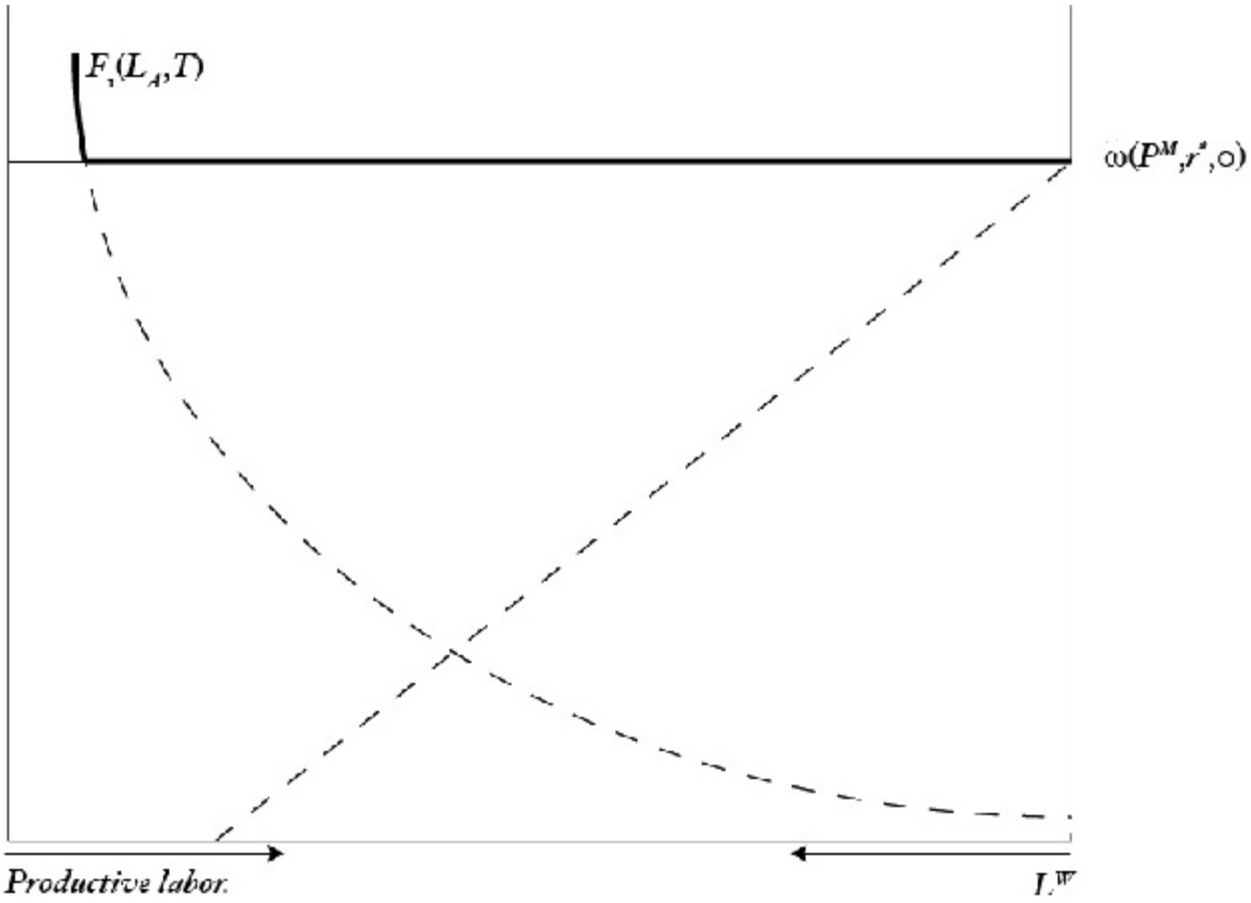

Figure 1: Productive sector labor demand in the absence of violence.

violence in this economy. Then for a wage below $\tilde{\omega}(P^M, r^*, 0)$, the manufacturing sector would have a boundless demand for labor, while for a wage above that level, the only productive sector labor demand would be from agriculture. This would be a quantity of labor that would equate the marginal value product of labor in agriculture with the wage. The result is a demand for labor curve such as is indicated by the kinked solid curve in Figure 1, where labor is measured along the horizontal axis, wages are measured along the vertical axis, and the length of the box is the economy's total labor supply, $\bar{L}$. Labor used in the productive sector of the economy, agriculture and manufacturing, is measured rightward from the left-hand-side origin, and labor used in civil conflict, L^W, is measured leftward from the right-hand-side origin. The downward-sloping curve traces the marginal value product $F_1(L^A, T)$ of agriculture, and the horizontal line traces the manufacturing reservation wage.

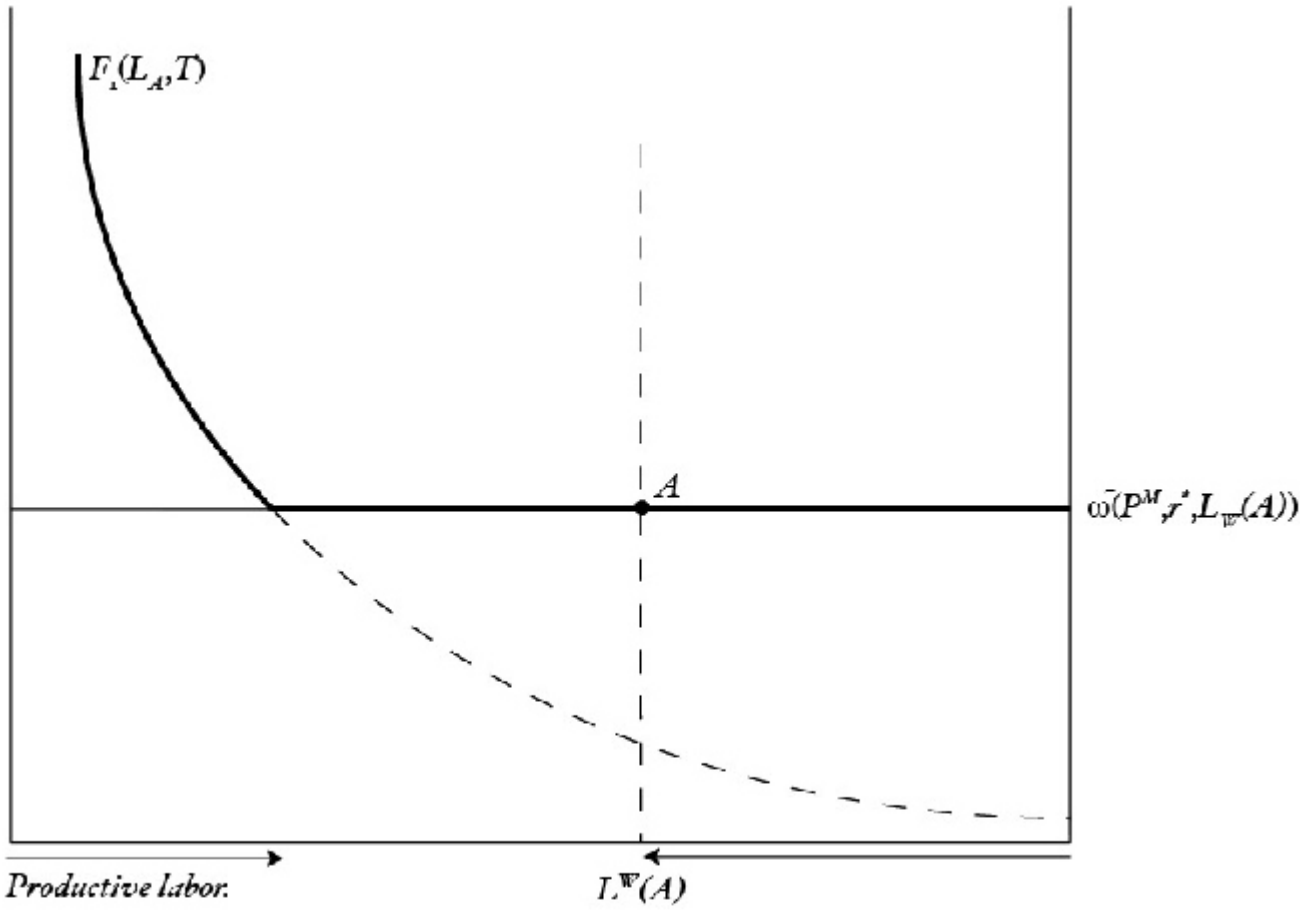

Figure 2: Productive sector labor demand: Low level of violence.

Note that only one point on this diagram could be consistent with equilibrium: $L^W = 0$ implies that all labor is used in the productive sector, so that the equilibrium point must be on the rightmost edge of the diagram. This implies a wage of $\tilde{\omega}(P^M, r^*, 0)$, with positive manufacturing employment.

Next, we can consider a small positive level of violence, as depicted in Figure 2. Again, the productive-sector demand for labor conditional on the assumed positive value for L^W is given by the kinked broken line (with a lower reservation wage in manufacturing compared to Figure 1, due to the effect of violence), and again that level of L^W is consistent with only one point in the diagram. That point is marked as *A*, the point on the kinked curve from which the distance rightward to the end of the box is equal to L^W. Note that the wage is equal to $\tilde{\omega}(P^M, r^*, L^W)$, with positive manufacturing employment.

Increasing L^W somewhat leads to the outcome in Figure 3. Here, the horizontal line is lower than in Figure 2, reflecting the higher cost of manufacturing in the presence of a more violent environment and the consequent need for lower wages to break even. Again, the productive-sector demand for labor conditional on L^W is given by the broken, kinked line, and again only one point on that line is consistent with the assumed value of L^W. Here, that point is marked as *B*, which is right at the kink. In this case, manufacturing employment is at zero, and the wage is equal to $\tilde{\omega}(P^M, r^*, L^W)$.

Finally, consider a higher value of L^W still, as depicted in Figure 4. Here, L^W is equal to the distance between point *C* and the rightmost axis of the figure, so that point on the broken kinked curve is the only one consistent with labor market equilibrium. Note that *C* is to the left of the kink, indicating that there is zero manufacturing employment, and that the wage is strictly above the breakeven wage for manufacturing. The wage is now equal to $F_1(\bar{L} - L^W(C), T)$, and the market

clears with only agricultural employment. Note that since each increase in L^W moves the kink rightward (by lowering $\tilde{\omega}(P^M, r^*, L^W)$) and moves the point on the curve consistent with L^W leftward, there is a critical value of L^W such that for values below that, the equilibrium point is to the right of

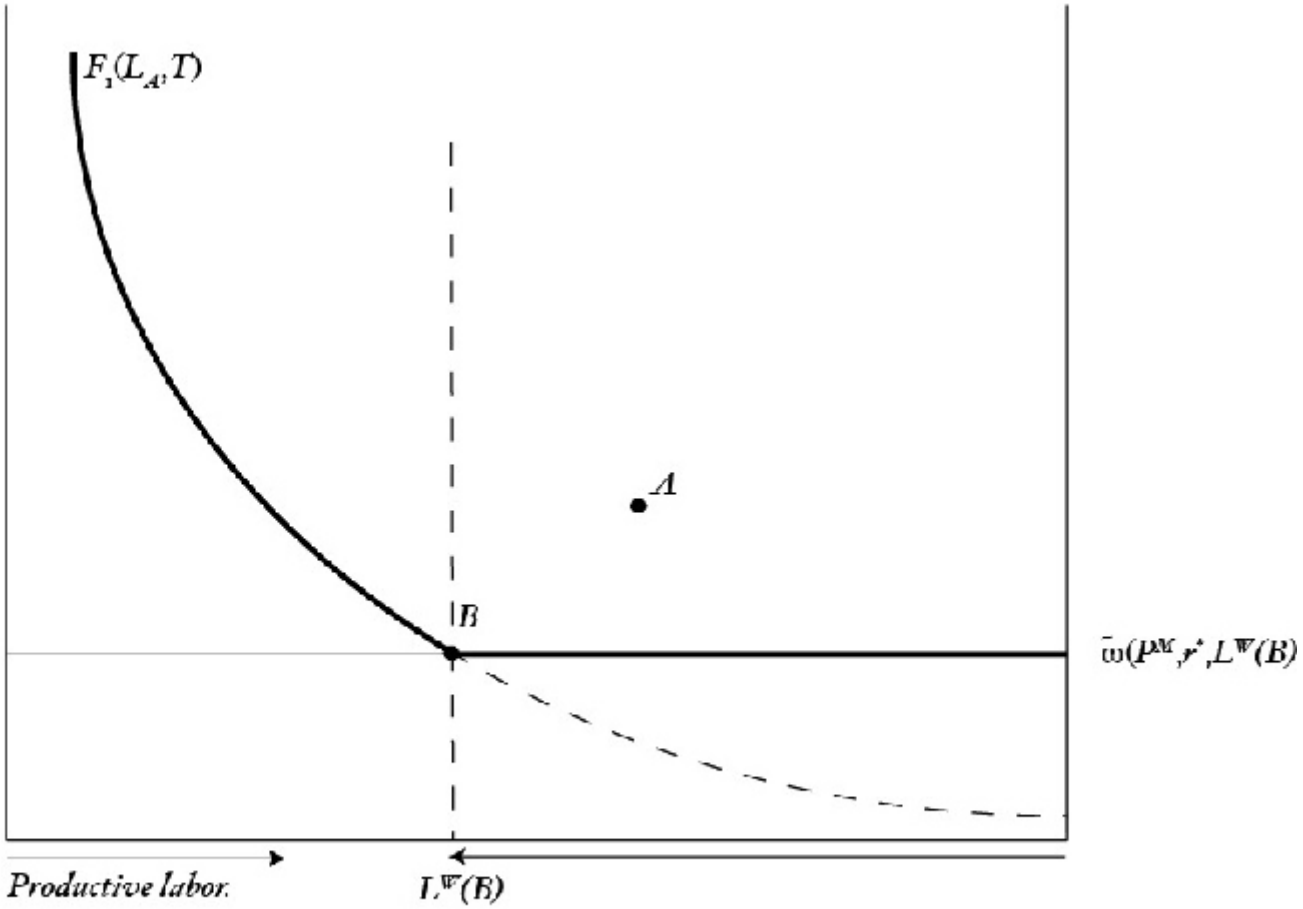

Figure 3: Productive sector labor demand: Intermediate level of violence.

the kink, while for values above it, the equilibrium is to the left of the kink. Thus, sufficient levels of violence will definitely crowd out the manufacturing sector.

This is all summarized in Figure 5, which shows the locus DD' of all points consistent with equilibrium in the productive-sector labor market as L^W is varied from 0 to $\bar{L}$. It has a downward-sloping portion, to the left of *B*, consistent with high violence and zero manufacturing employment, and an upward-sloping portion, to the right of *B*, consistent with low violence and positive manufacturing employment. This locus will henceforth be called the 'demand curve for

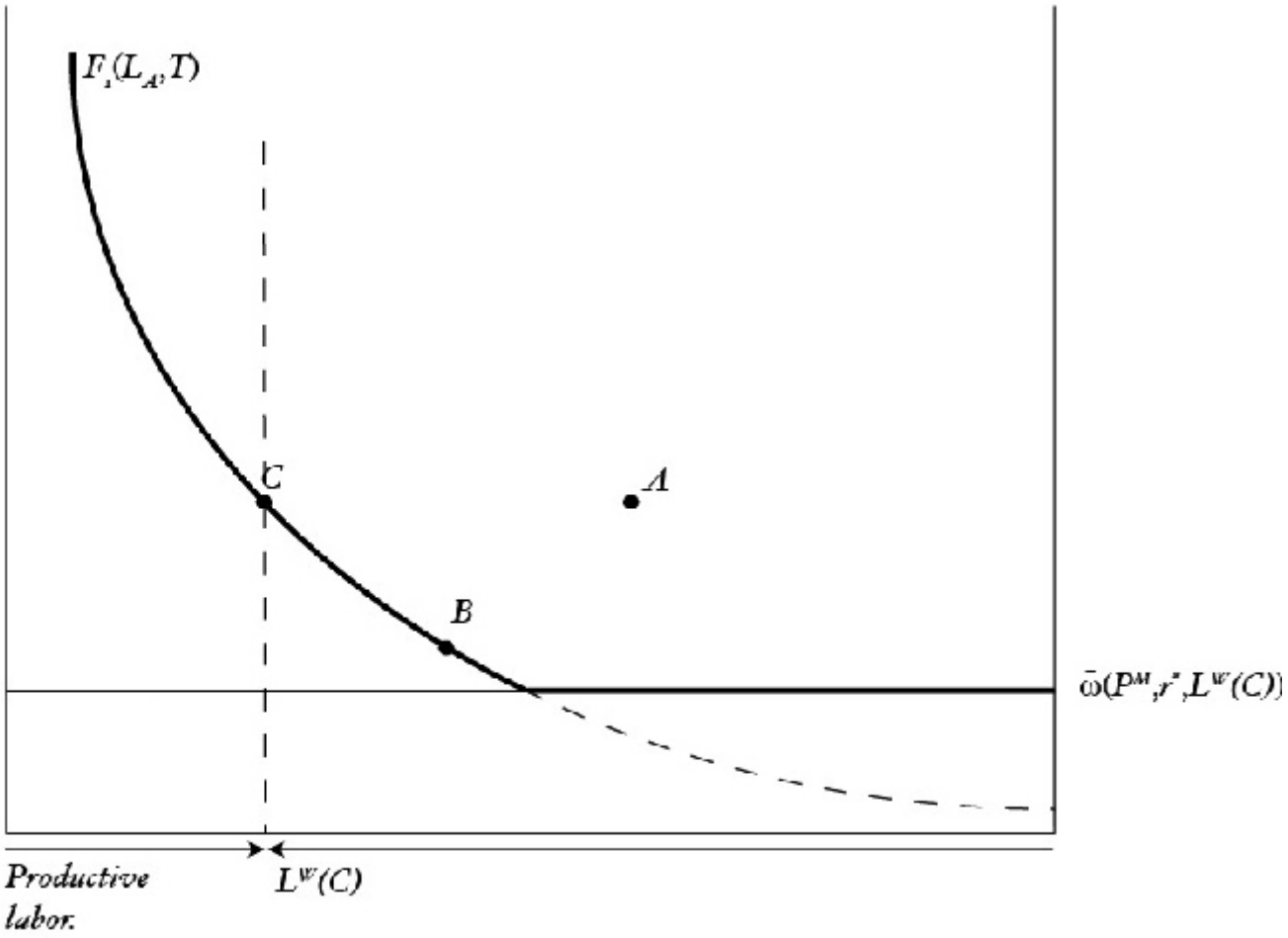

Figure 4: Productive sector labor demand: High level of violence.

productive-sector labor.'

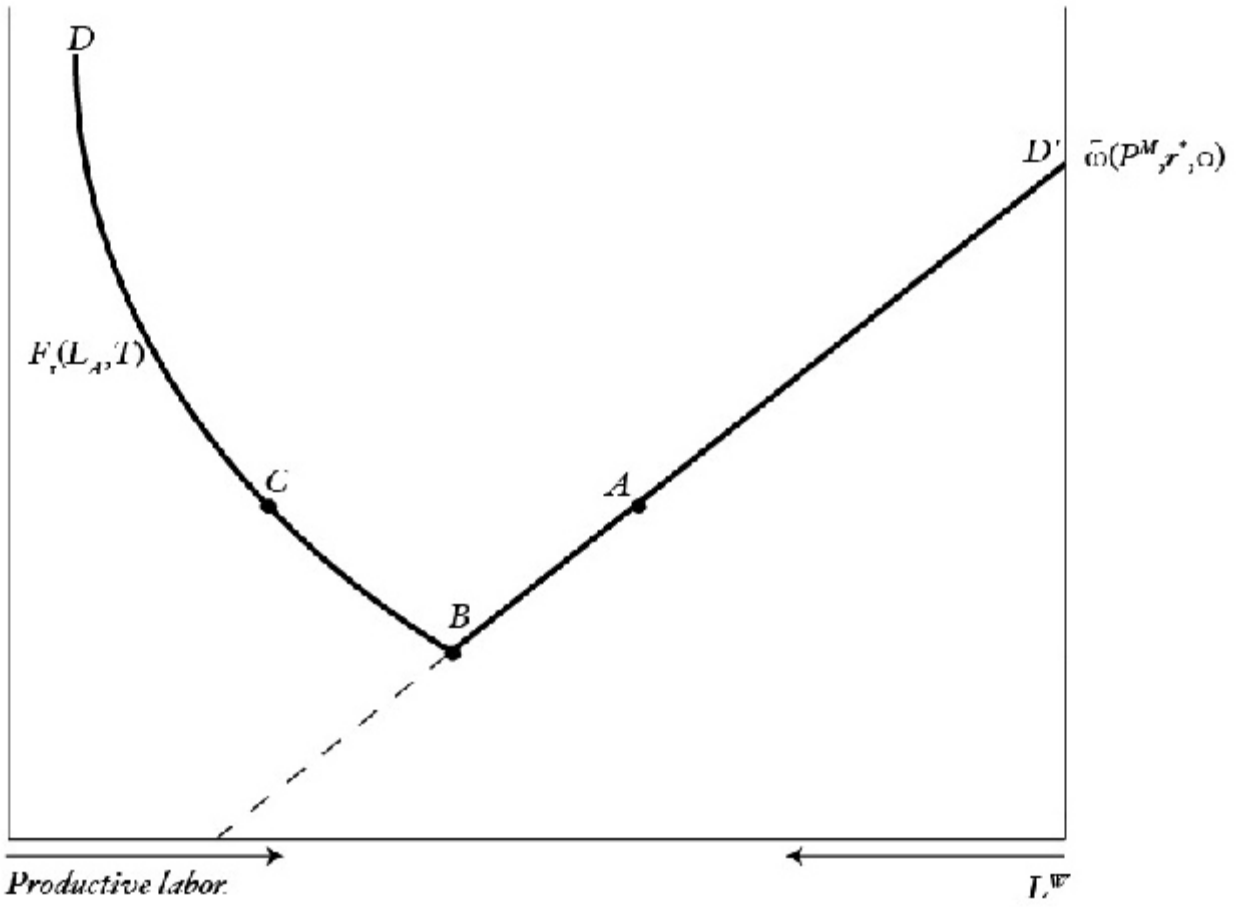

Figure 5: Productive sector labor demand curve, correcting for violence.

3. Supply of labor to the productive sector.

Turning now to equilibrium in the unproductive sector of the economy, we can derive L^W from P^D and ω. This will then imply a value for $\bar{L} - L^W$, the labor supply available to the productive sector.

Taking the derivative of warlord *i*'s profit with respect to L^i:

$$P^D\phi(L^i)/\{[\phi(L^i) + (n-1)\phi(L^W/n)]L^i\} - \omega L^i \qquad (1)$$

and setting equal to zero yields:

$$\frac{P^D \phi'(L^i) \sum_{j \neq i} \phi(L^j)}{\left(\sum_j \phi(L^j) \right)^2} = \omega.$$

Using the symmetry of the problem that implies $L^i = L^W/n$ in equilibrium, plus the free-entry condition $P^D/L^W = \omega$, implies that:

$$\left(1 - \tfrac{1}{n}\right)\eta^i = 1,$$

where η^i denotes the elasticity of the ϕ function with respect to L^i. Focussing on the case in which n is large, this implies (to a close approximation) a fixed scale L^{**} for each army, regardless of demand and supply conditions, determined by setting the elasticity of ϕ equal to 1.

Note given the free-entry condition, adding up (1) across all warlords gives the condition:

$$L^W = P^D/\omega.$$

Subtracting this from $\bar{L}$ yields the supply of labor to the productive sector. Rewriting this as:

$$\omega = \frac{P^D}{L^W},$$

we plot it as the curve SS' in Figure 6.

4. Equilibrium.

Putting together the demand for labor by, and supply of labor to, the productive sector gives us the full equilibrium, in which the wage ω and the number of fighters L^W are both endogenized. This is shown in Figure 6. The upward-sloping supply is given by the curve SS', and the demand curve is given by DD' as derived earlier. Any intersection of the two is an equilibrium.

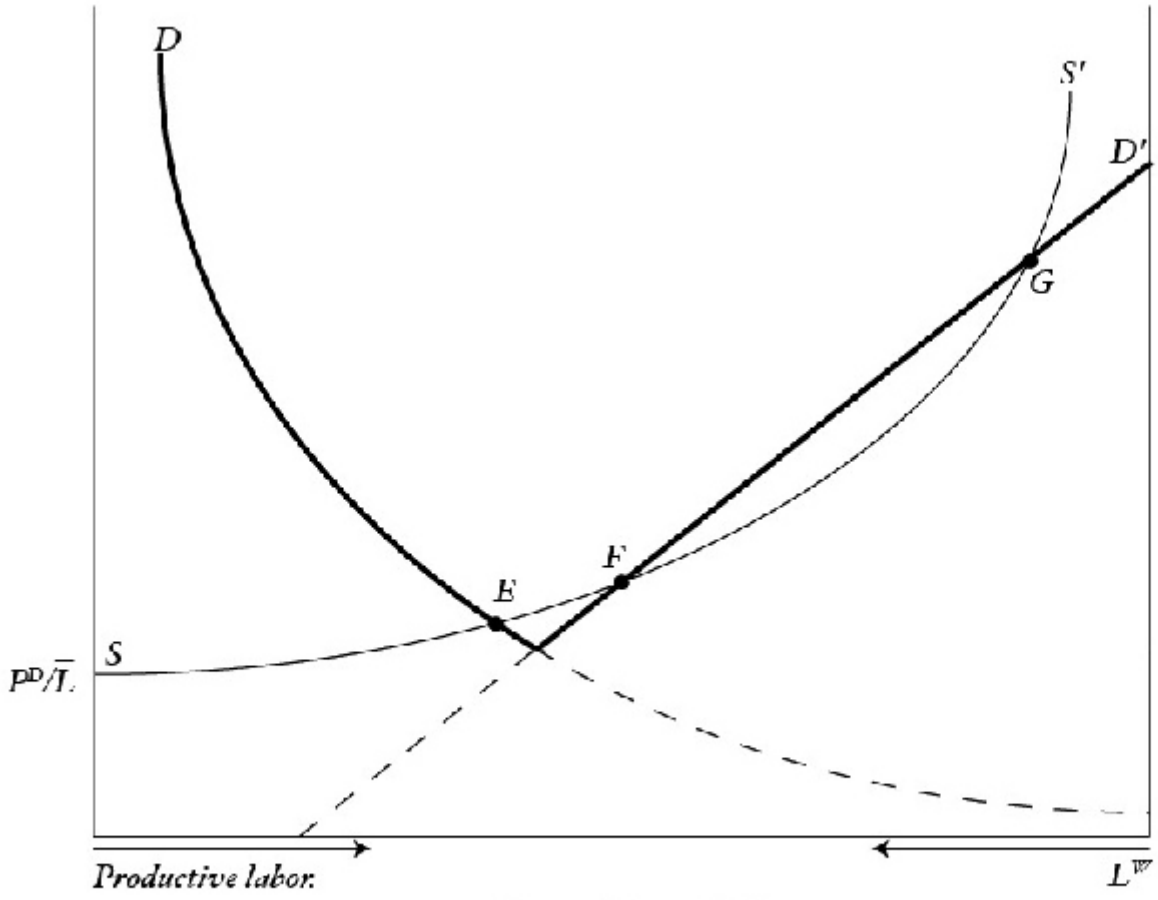

Figure 6: Equilibrium.

Note that an increase in P^D will shift SS' up; an increase in r^* will shift DD' down, and an increase in P^M will shift DD' up.

It can now be seen that within this framework there can be as many as three equilibria, two of them stable and welfare ranked. The good equilibrium, marked *G*, has low L^W and high ω, with a low level of violence, a high level of capital and manufacturing employment, and high wages. The bad equilibrium, marked *E*, has high L^W and low ω, with a high level of violence, capital flight and no manufacturing employment, together with low wages. These are clearly welfare-ranked because the output prices are the same in both cases, but national income is lower for *E*, due to withdrawal of more labor from the productive sector. However, they are not Pareto-ranked: Workers are worse off at *E*, capitalists are indifferent, and landowners are better off at *E*. (Of course, we have assumed that landowners are not troubled by the 'flying bullets' problem, which is not realistic.)

Further, a sufficient increase in P^D or r^* or decrease in P^M will eliminate the good equilibrium, while a sufficient movement of any of these prices in the opposite direction will eliminate the bad equilibrium. This is illustrated by Figure 7, which shows the diagram of Figure

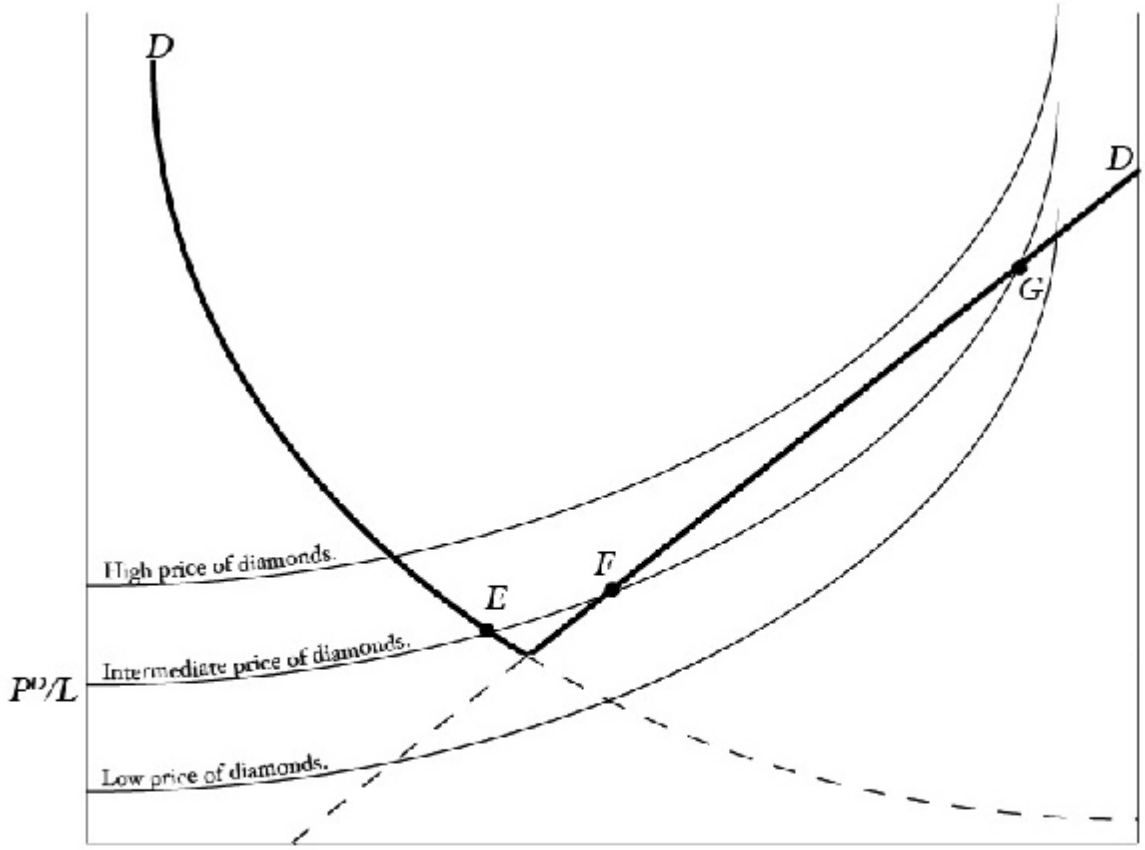

Figure 7: Effect of changing the price of diamonds, holding other world prices constant.

6 for three values of P^D, and a different location for the SS' curve for each one. This can lead to sharp discontinuities in outcomes; for example, as P^D moves from a very low to a very high value, we must at some point have a discontinuous increase in L^W.

Under what conditions will the multiple equilibria of Figures 6 and 7 be possible? The key criterion is illustrated in Figure 8. Since the upward-sloping portion of the DD' curve (in

other words, the ω̃ curve) is linear with our functional-form assumptions, and since the SS' curve is strictly convex, if we shift SS' up or down by adjusting P^D, we find a unique value, say, P', at which DD' and SS' have a point of tangency. Call the value of L^W at which the two curves are tangent L'. If this point of tangency is part of the DD' curve, then reducing P^D slightly below P' will create multiple equilibria as in Figure 6. This occurs, for example, if the marginal product of labor in agriculture looks like the curve $F_1(L_A, T^L)$ in Figure 8, yielding $DA^L D'$ as the demand curve for productive labor. However, it could be that the point of tangency lies *below* the DD' curve, as

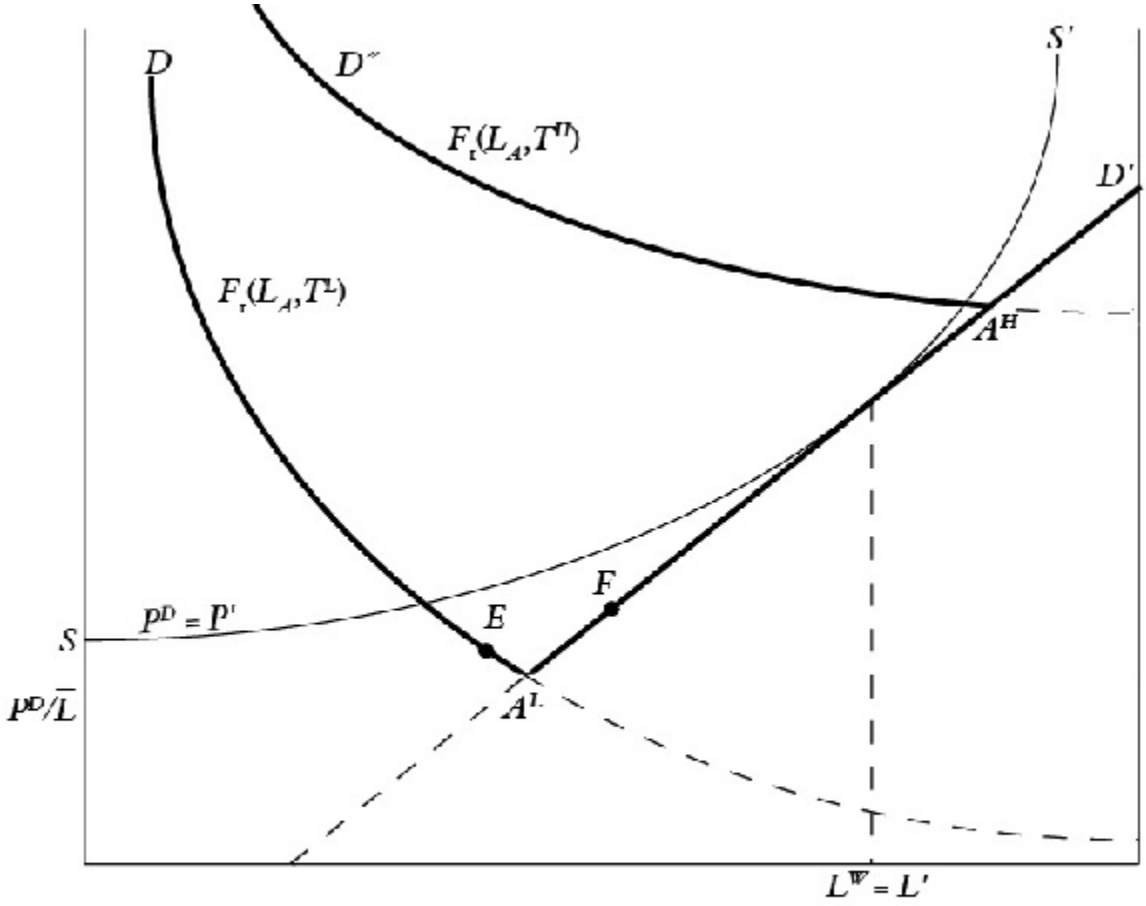

Figure 8: Conditions for multiple equilibria.

occurs if the marginal product of labor in agriculture looks like $F_1(L_A, T^H)$ in Figure 8, yielding

DA^HD'' as the demand for productive labor. In this case, no matter what value P^D takes, there is only one equilibrium.

The difference between the two cases is the amount of arable land. An increase in arable land shifts the marginal product of labor in agriculture up, making multiple equilibria less likely. This is all summarized as follows.

Proposition. Fix $\bar{L}$, P^M, a_L , a_K , and L^*. Let P' and L' be the unique values of P^D and L^W respectively such that

$$\tilde{\omega}(P^M, r^*, L^W) = \frac{P^D}{L^W}, \qquad \text{and}$$

$$\frac{P^M}{a_L L^*} = \frac{P^D}{(L^W)^2}.$$

(These are the conditions for tangency of SS' and DD'. The first condition is simply that the height of the SS' curve is equal to $\tilde{\omega}(P^M, r^*, L')$ at that point, and the second condition equates the slopes of the two.) Let T' be the unique value of T such that $F_1(\bar{L} - L', T') = P'/L'$ (the value of T such that the DD' curve has its kink at the point of tangency just identified – recall Figure 8). Then:

(i) If $T \geq T'$, then regardless of the value of P^D, there is a unique equilibrium. There is a critical value of P^D, P'', such that if $P^D \geq P''$, the equilibrium has no manufacturing, while if $P^D < P''$, the equilibrium has positive manufacturing.

(ii) If $T < T'$, then there are two critical values of P^D, $P' > P''$, such that there is a single equilibrium with no manufacturing when $P^D \geq P'$; there is a single equilibrium with manufacturing when $P^D \leq P''$; and there are two stable equilibria, one with manufacturing and one without, when $P^D \in (P'', P')$.

The reason it works this way is that (by assumption) only manufacturing is harmed by the externalities from violence. This is clearly not a realistic assumption, but the point being captured here is that manufacturing is likely to be *more* responsive to violence than other sectors in the sense that capital is to some degree footloose, in that it can find a home in any country, while land is not. More realistically, of course, productivity in agriculture would also be to some degree affected by violence, but the point captured by the proposition is that *the more responsive the productive sector is to the externalities from violence, the more likely are multiple equilibria*.

The implications of 'globalization,' then, can be seen to depend on the *type* of globalization experienced. A reduction in transport and transaction costs and opening of new markets could imply an increase in P^D, the local border price of the resource. This will make civil war more likely. If manufactures are a net export, the same logic means globalization could mean that P^M rises, making war *less* likely. On the other hand, if manufactures are a net import, globalization would mean that P^M falls, making war *more* likely. Finally, a reduction in international transaction costs lowering the local cost of capital could mean that r^* falls, making war less likely.

Figure 9 shows the implications of these effects for welfare, limiting our discussion to purely economic measures of welfare and disregarding the obvious additional social and humanitarian impacts of violence. Assume that $T < T'$. Figure 9(a) shows real GDP as the shaded region in the 'good' equilibrium, represented by point *G*. Income to workers is equal to the wage

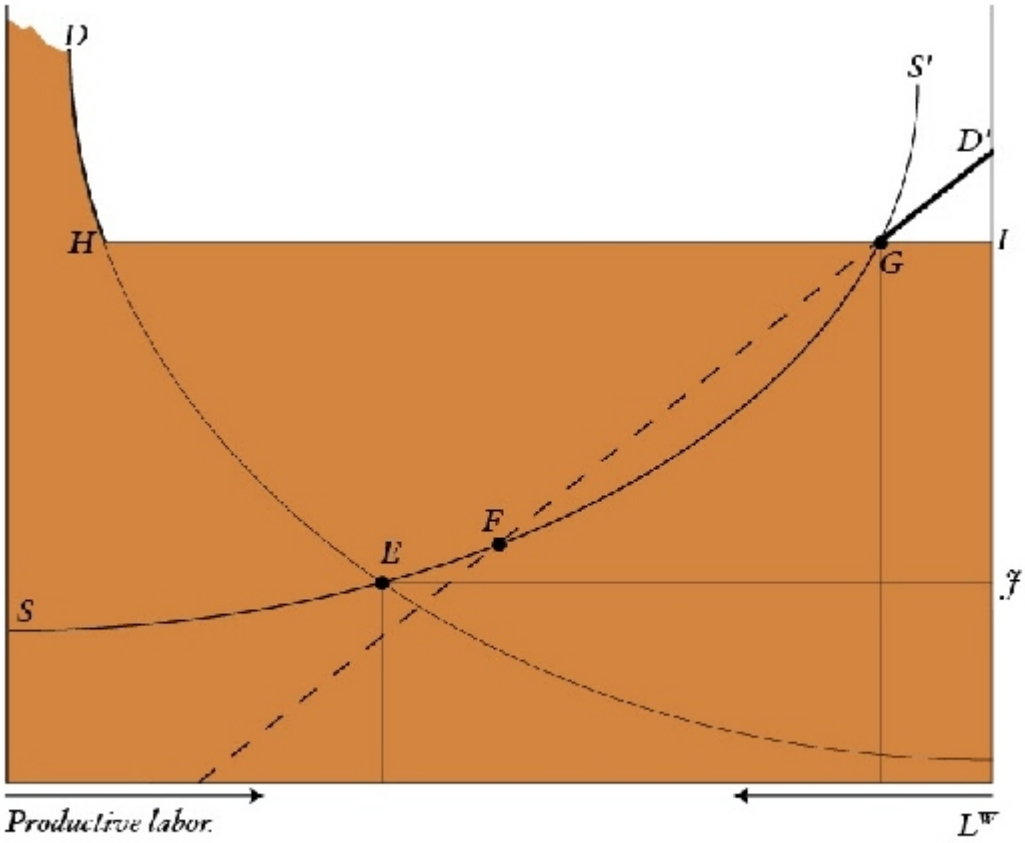

Figure 9(a): GDP in the low-violence equilibrium.

times the labor force, including those workers who have chosen to join the warlord sector, because in equilibrium they earn the same amount as other workers. This income is given by the height of *G* multiplied by the length of the box. In addition, farmers receive some land rents equal to the area between the marginal product of labor curve for agriculture and the wage. Adding this up gives the shaded region under *DHGI*. Note that the income captured by the fighters is equal to the value of diamond rents, and can be identified as the rectangle under *GI*. Note as well that a small increase in the price of diamonds would, by moving point *G* down and to the left along *DD'*, *reduce* real GDP, despite that fact that this would represent an *improvement* in the country's terms of trade. The reason is that all of the additional resource rents are burned up by rent seeking through warlordism,

providing no direct benefit to the economy; and that further, the 'stray bullets' problem reduces productivity in manufacturing even more than before the rise in the price of diamonds, because of

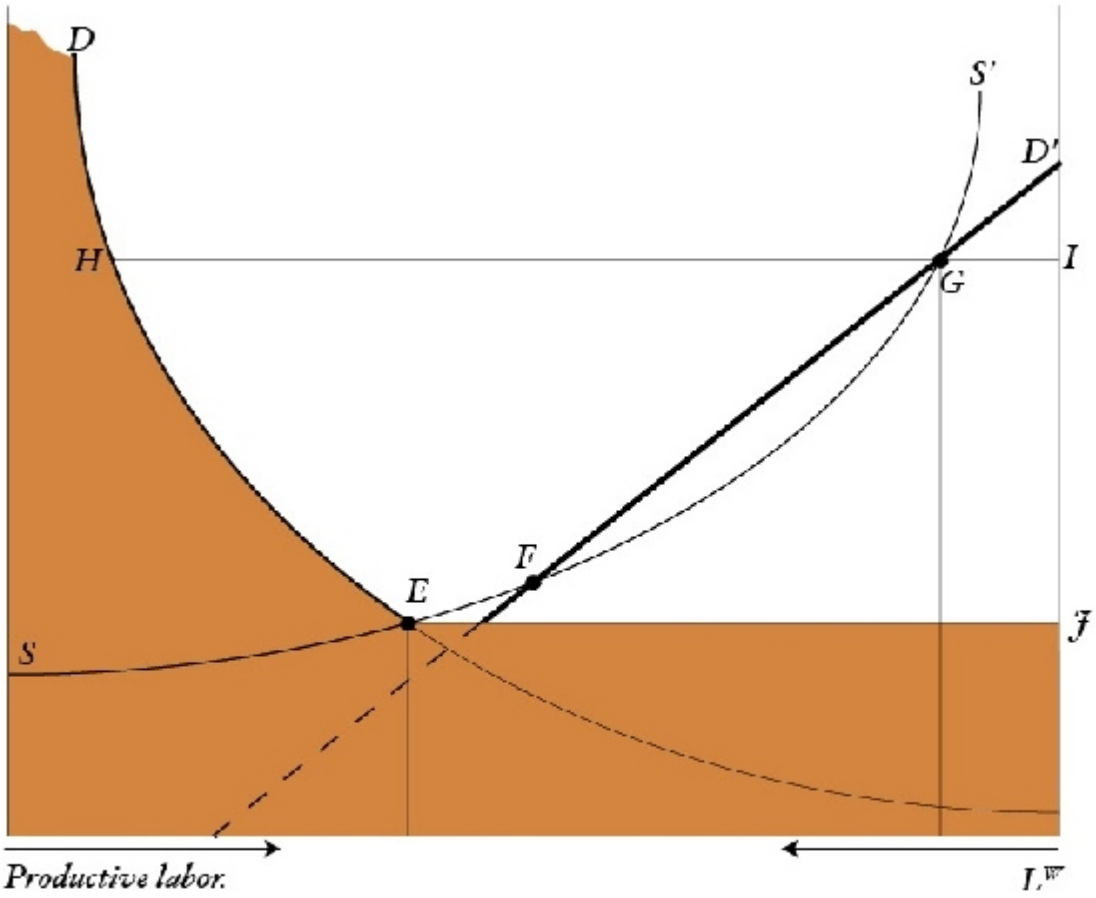

Figure 9(b): GDP in the high-violence equilibrium.

the increase in violence.

Figure 9(b) shows the same construction for the 'bad' equilibrium, at point *E*. Real income lies under the curve *DEJ*. In this case, the diamond rents are equal to the rectangle under *EJ*, which must be equal to the rectangle under *GI* (by the definition of the *SS′* curve.)

The loss in welfare incurred by the shift to the bad equilibrium is shown by Figure

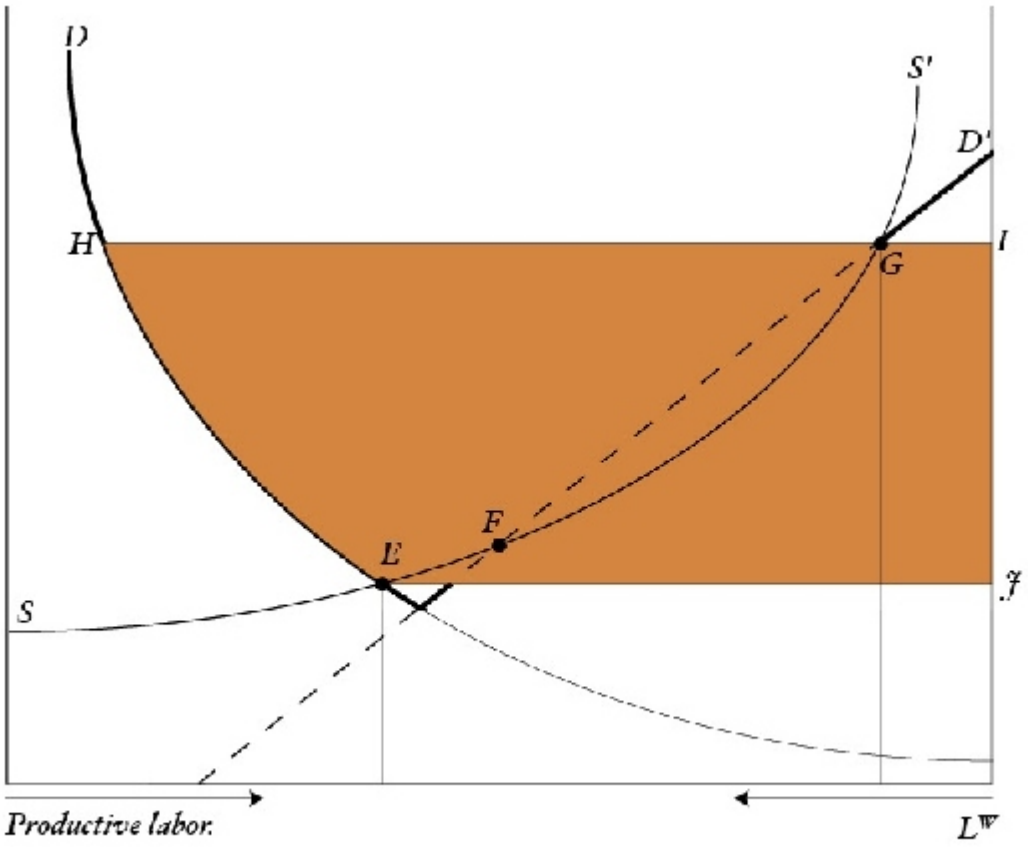

Figure 9(c): The economic welfare cost of war.

9(c). It amounts to the loss of wage income due to violence-induced capital flight, minus the partially-offsetting gain in increased agricultural output.

Note what these discontinuities imply for the time-series behavior of the system. Assume for simplicity that if we allow the world prices facing this economy to fluctuate over time, then if it is in the 'good' equilibrium, it will remain in the 'good' equilibrium for the current parameter values until parameters shift so much that the 'good' equilibrium no longer exists. Make the parallel inertial assumption for the 'bad' equilibrium. Then an example of a possible history of this system is depicted in Figure 10. Here, only P^D is fluctuating. The system is initially in the good equilibrium (which is referred to in the figure for simplicity as 'peace,' although there is always some violence).

The threshold P' is the value for P^D below which the bad equilibrium does not exist, and the threshold P'' is the value above which the good equilibrium does not exist. Peace persists, with varying low levels of violence, as P^D rises from below P' all the way up to P''. When it crosses that threshold, suddenly the economy moves from G to E in Figure 6, and the economy suffers an

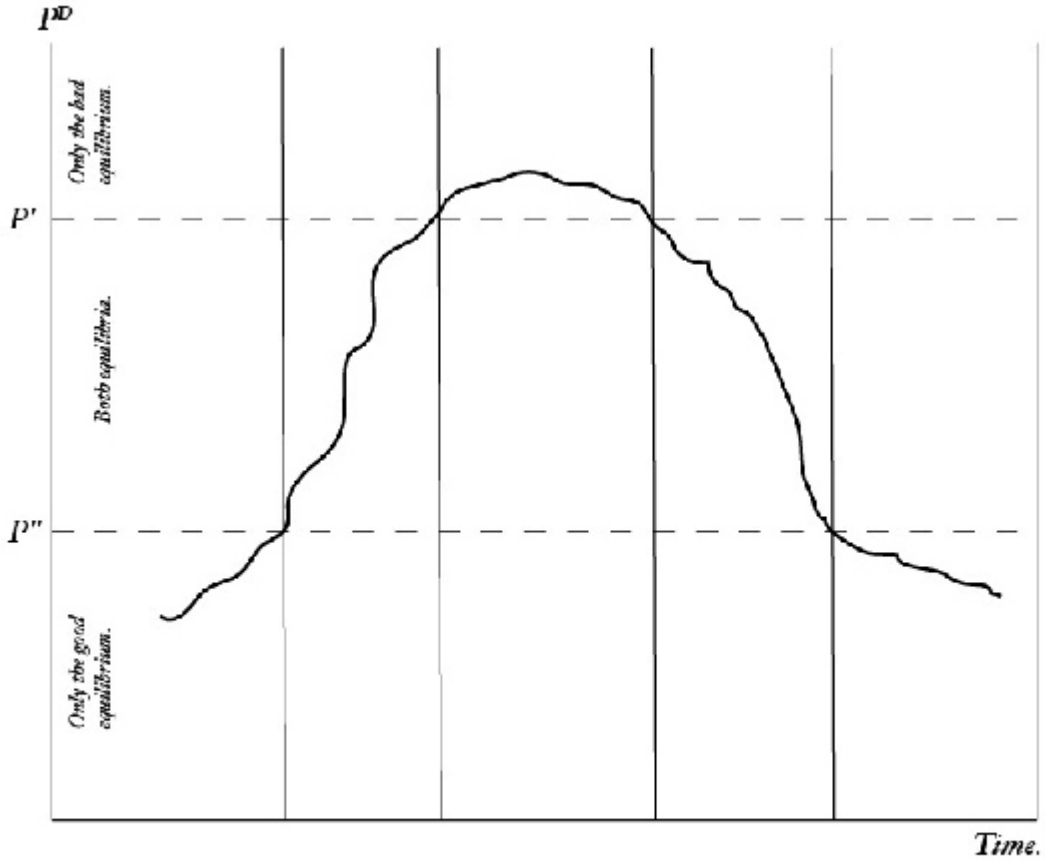

Figure 10: An example of how these forces may play out over time.

explosion of catastrophic violence. It make take observers by surprise, because the underlying parameters have changed only gradually. The disastrous war will persist until long after P^D has fallen below the level at which war broke out; indeed, it must fall all the way back down to P'.

Thus, the model predicts a kind of inertia, both in peace and in war. It also provides support

for the efforts to clamp down on sales of diamonds from civil-war-torn areas of Africa, and for trade measures such at the US government's African Growth and Opportunities Act and the European Union's Anything But Arms initiative, which both promise to increase the demand for labor-intensive manufactured exports from Third World areas affected by civil strife. Further, it suggests that any measure that makes foreign capital more available to a country with a potential civil instability problem may (by lowering r^*) have a potentially enormous role in switching the economy from the bad equilibrium to the good one, apart from its familiar incremental role of raising domestic incomes.

5. Extensions.

Possible extensions include the following.

(i) A monopolistic warlord, who can appropriate a large fraction of the resource if he hires more workers/soldiers. It seems likely that this would eliminate multiple equilibria but not the discontinuities observed in this model.

(ii) A resource sector that requires labor to extract, thus having a direct effect on the demand for labor. This might conceivably allow for the possibility that a *drop* in P^D could have a positive effect on war, which seems to have been important in the Salvadoran case (North, 1981, pp. 35-9).

(iii) The possibility of government response to insurgents, by arming itself, thus setting up a Nash equilibrium between government and insurgents. This is explored in detail in Collier (2000a) and Wick (2008), in models without the particular general equilibrium effects highlighted here. It would make sense to ask what the interactions between the two sets of effects might be.

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