MERCATUS CENTER
GEORGE MASON UNIVERSITY

Global Prosperity Initiative
Working Paper 46

Trading With Bandits

PETER T. LEESON*

Abstract

Is it possible to trade with bandits? When government is absent the superior strength of some agents makes it cheaper for them to violently steal what they desire from weaker agents than to use trade to obtain what they want. Such was the case with middlemen who interacted with producers in late pre-colonial West Central Africa. In the face of this threat, producers employed two mechanisms to make exchange with middlemen possible. On the one hand, they used credit to alter the middlemen's cost/benefit structure of engaging in plunder versus trade. On the other hand, producers demanded tributes from traveling traders as a risk premium. By transforming traveling traders' incentives from banditry to peaceful trade, and reducing producers costs associated with interacting with middlemen, these mechanisms enhanced both parties' ability to capture the gains from exchange. (JEL N77, C72)

* **Peter T. Leeson** is an Assistant Professor of economics at West Virginia University. Previously, he was a Mercatus Center Social Change Graduate Fellow and a Ph.D. student in economics at George Mason University.

Trading with Bandits*

Peter T. Leeson
Department of Economics
George Mason University

September 17, 2004

Abstract

Is it possible to trade with bandits? When government is absent, the superior strength of some agents makes it cheaper for them to violently steal what they desire from weaker agents than to use trade to obtain what they want. Such was the case with middlemen who interacted with producers in late pre-colonial West Central Africa. In the face of this threat, producers employed two mechanisms to make exchange with middlemen possible. On the one hand, they used credit to alter middlemen's cost/benefit structure of engaging in plunder versus trade. On the other hand, producers demanded tributes from traveling traders as a risk premium. By transforming traveling traders' incentive from banditry to peaceful trade and reducing producers' costs associated with interacting with middlemen, these mechanisms enhanced both parties' ability to capture the gains from exchange. (*JEL* N77, C72)

*I am grateful to Robert Bates, Peter Boettke, Tyler Cowen, Chris Coyne, Jack Goldstone, Andrei Shleifer, Melissa Thomas and Richard Wagner for indispensable comments and suggestions. I also benefited from the comments of seminar participants at Harvard University where I presented an earlier draft of this paper. The financial assistance of the Oloffson Weaver Fellowship is gratefully acknowledged.

"How wonderful is commerce . . ." (1963 [1854]: 32).

—David Livingstone, 19th century British explorer of the remote interior of West Central Africa

1 Introduction

No sane economist would argue that it is possible to trade with bandits. We have all learned that the market alone is insufficient to prevent the strong from plundering the weak. Indeed, the threat of violence is perhaps the oldest, most well-accepted justification for government. Even Adam Smith believed this was true:

> "It is only under the shelter of the civil magistrate that the owner of . . . property . . . can sleep a single night in security. He is at all times surrounded by unknown enemies, whom, though he never provoked, he can never appease, and from whose injustice he can be protected only by the powerful arm of the civil magistrate continually held up to chastise it" (1965 [1776]: 670).

The market, however, might be better at negotiating threats of violence than we once thought. Could economists have underestimated the market's power and beauty in this regard?

A growing body of research considers how agents can overcome dishonesty where state enforcement is absent (see for instance Greif 1989, 1993; Milgrom et al 1990; Leeson 2004). These studies, however, exclusively consider commitment problems that involve potential for what might be called "peaceful theft" in that recourse to physical violence is not used to take advantage of the wronged party. For peaceful theft, a separation of payment and provision, not a difference in actual strength, accounts for an individual's ability to defraud his exchange partner.

Equally important when government is absent is what might be called "violent theft." Here the perpetrator is a bandit who uses physical force to overwhelm his victim. His superior strength gives him the ability to defraud others.

Introducing bandits into standard models of peaceful theft can cause them to break down. These models rely in various ways on the "folk theorem" to work. The shadow of the future in conjunction with the threat of multilateral punishment can create cooperation if agents are patient enough. But when some agents are sufficiently stronger than others, multilateral punishment may no longer secure cooperation. Weaker agents can eternally boycott stronger agents who behave violently, but boycott does not prevent stronger agents from simply taking what they want from weaker ones.

This need not always be the case. If the stronger agent is stationary but the weaker agent is mobile, boycott is effective. This is the case, for instance, in the medieval situation described by Greif et al (1994). However, in situations where individuals have disparate strengths *and* stronger agents are mobile while weaker ones are not, multilateral punishment cannot work. Weaker agents may refuse to interact with stronger individuals who behaved violently toward them in the past, but if they cannot run and the stronger agents can, their refusal won't prevent them from being plundered again. Something other than the threat of lost revenue from repeated exchange is needed to create cooperation.

Unlike peaceful theft, the topic of violent theft has received relatively little attention. Existing models that consider the potential for violent theft assume both parties can transform their resources into "useful goods" or coercive power (see for instance, Bush and Mayer 1974; Umbeck 1981; Hirshleifer 1988, 1995, 2001; Skaperdas 1992, 2003; Anderson and McChesney 1994; Skaperdas and Syropoulos 1997; Neary 1997; Grossman 1998; Grossman and Kim 2002; Bates et al 2002). While this assumption is reasonable in many cases, it is not in many others. For instance, if one player has a monopoly on the technology of greatest violence, the other may be severely limited in her ability to invest in strength for the purposes of defense or aggression.[1] In these models, introducing severe limitations on the ability of certain agents to invest in additional strength leads to a situation in which those who are not so constrained plunder those who are. In other words, "permanently weak" agents cannot avoid violent theft in equilibrium (see for instance, Hausken 2004).

With both multilateral punishment and investment in greater strength eliminated as means for coping with the threat of violent theft, it would seem that there is no way for permanently weak individuals to exchange with stronger ones. Despite this, I contend that trade between permanently weak and permanently strong individuals is possible without government.

[1] Of course, no one is ever completely constrained in their ability to invest in additional violent power. Even if, say, you have all the guns and I have no means of producing any, I can still train myself as a better boxer, etc. The point is that I do not have the ability to increase my strength enough this way to fight you off if you have guns.

Weaker individuals' inability to rely on mechanisms described by the "folk theorem" and to invest in force for defense or aggression does not prevent them from making exchange with bandits self-enforcing in the face of threats of violent theft.

To examine my hypothesis I consider the case of late pre-colonial Africa.[2] European settlers on the West coast of Africa employed middlemen to collect the goods they needed for export from producers in the remote interior of Central Africa.[3] In addition to this, some Africans operated as middlemen on their own account—connecting European exporters and others with producers in the interior. Caravans of traveling middlemen were frequently stronger than the communities of producers they interacted with. They were thus tempted to overwhelm these communities with force and steal the goods they desired rather than trading for them.

I argue that communities of producers used two mechanisms to transform middlemen's equilibrium strategy from banditry to peaceful trade. First I discuss producers' use of credit as a means of enhancing the efficiency of producer-middleman exchange relations. Second, I look at producers' demands for tribute from middlemen as a kind of risk premium promoting producers' ability to interact with traveling traders. These mechanisms are "new" in that, to my knowledge, until now they have not been used to explain how agents make exchange self-enforcing in the face of threats of violent theft.

Because multilateral punishment cannot create cooperation where one class is permanently weak, unlike most models of self-enforcing exchange, mine does not rely upon reputation or repeated play to achieve cooperation. Similarly, since one class of players is unable to substantially affect its strength through investment, the emphasis of my analysis shifts from individuals' optimal investments in coercive capital (the focus in existing models that deal with violence) to the strategies employed by permanently weaker individuals to alter the incentive of stronger agents for trade vs. banditry.[4]

[2] For a superb treatment of West African trade in the colonial period through the early 1950s, see Bauer (1954).

[3] As Serpa Pinto summarized it: "trade in Africa was divisible into two branches, viz. the purchasing of goods from the whites and selling them the produce of the country, and purchasing such produce from the blacks and selling to them the aforesaid goods" (1881: 22). This trade was conducted by traveling middlemen.

[4] Olson (1993) and McGuire and Olson (1996) consider the case when the stronger party finds it in his interest to establish permanent hegemony over the weaker individuals. If his interest is stable and encompassing, and the ruler is sufficiently patient, he can make more this way than by sporadically pillaging weaker parties. This paper considers the use

To examine these strategies I utilize primary source materials regarding interaction between middlemen and producers in West Central Africa in the latter half of the 19th century. These sources are composed from the in-depth reports of about 20 European travelers to the area during this period. Many of these travelers were themselves traders, while others were "explorers" interested in learning more about the state of African trade for their home countries and spreading the word of Christianity.

2 The Context of Producer-Middleman Relations in Late Pre-Colonial Africa

In examining late pre-colonial interaction between middlemen and producers in West Central Africa this paper deals primarily with the inhabitants around the Upper Zambezi and Kasai, Portuguese-speaking settlers along the Angolan coast, and the middlemen they employed. Indigenous Africans from this region consisted primarily of the Chokwe, Luvale, Southern Lunda,[5] Luchazi and Mbunda-Mbwela. These people populated the territories that roughly encompass what are today the Zambezi and Kabompo districts in the North-Western province of Zambia, the Moxico, Lunda Sul and part of the Lunda Norte provinces in Angola, and the southeastern part of the Democratic Republic of Congo's Lualba district in the province of Katanga.

The precise date of colonization in this region is difficult to pinpoint. While official Portuguese control of Moxico, for instance, began as early as 1895, colonial domination of the region did not extend to Kangamba until 1903 and into other close areas until 1908. Furthermore, colonial control in the region was not really effective until perhaps as late as 1910. For my purposes, however, the precise date of colonization is unimportant. I analyze exchange between middlemen and African producers in the late pre-colonial period, which roughly corresponds with the last half of the 19th century.

Interaction between middlemen and producers in the interior of West Central Africa appears to have begun around 1790 (Botelho de Vasconcellos 1844 [1799]). The middlemen engaged in this interaction came primarily from one

---

of informal mechanisms that create a cheaper means of generating revenue from weaker agents than establishing government over them.

[5] "Southern Lunda" refers to the Lunda of Ishinde, which I primarily consider here. The Lunda, however, had two other major bases in Central Africa: the Ir kingdom in Congo (place of Mwata Yamvo) and Luapula (place of Kazembe).

of three groups: Actual Europeans—mostly Portuguese—affiliated with trading houses located along the Angolan coast, Euro-African traders—known as *sertanejos*—originating from Portuguese and various earlier European settlers, and indigenous African middlemen. This latter group was composed largely of the Ovimbundu—often called *pombeiros* ("barefoot traders") when they were the agents of European exporters on the coast and *quimbares* when they were independent middlemen.[6] Ovimbundu middlemen were natives of the Benguela Highlands in Central Angola and together with the *sertanejos* were instrumental in extending contact into the interior of Central Africa. Directly north of Bihe in Central Angola where many Ovimbundu middlemen resided was Kasanje—capital of the Mbangala people. Here existed another, though less prominent group of middlemen connecting interior producers and the coast known as *ambaquistas*. Many of these middlemen originated from Ambaca, an area near Luanda on the coast of Angola.[7]

Middlemen typically traveled in caravans and were constantly on the move.[8] These caravans consisted of other free middlemen, security charged with protecting the caravan on the road, and often a great number of slaves who carried the items for sale. Caravans ranged in size from tens to thousands, though based on the evidence available in travelers' reports, the modal caravan consisted of about 70 or 80 people (Miller 1988: 191; Cameron 1877: 251; Soremekun 1977: 87; Capello and Ivens 1882: I 17-18; Dias de Carvalho 1890: 186, 192, 193, 700; Harding 1905 [1900]: 214; Johnston 1893: 34). Coastal traders typically supplied imports to *sertanejos* and *pombeiros* on credit. Common imports carried by traveling traders to the interior included tobacco, gin, beads, shells and brass, which were used as body ornaments, as well as cloth and firearms. As the sole suppliers of firearms to interior communities, middlemen controlled the weaponry reaching producers and thus typically had the upper hand when it came to implements used in fighting.

The producers engaged in interaction with middlemen consisted of village

[6] Some inhabitants of the remote interior also acted as middlemen, though they were relatively few. Members of the Luvale who acted as carriers, for instance, would carry goods as far as Benguela on the coast. In contrast, those Chokwe acting as middlemen typically only went as far as Bihe in central Angola (Oppen 1994: 75), though Miller (1970: 184) suggests that post- 1877, some traveled all the way to the coast.

[7] The Bangala, located not from Ambaca, also performed a less prominent middleman function. See, for instance, Capello and Ivens (1969 [1882]) and Livingstone (1857).

[8] Capello and Ivens, for example, described the middlemen of Bihe as "eminently devoted to traveling . . ." (1969 [1882]: I 103).

chiefs/headmen and their "subjects" in the remote interior.[9] As producers, these individuals rarely traveled far beyond the bounds of their communities where the resources used in production could be found.[10] Their immobility was strengthened by the costliness of spending significant time away from home, especially in light of the fact that as producers, traveling for say the purposes of trade was not their comparative advantage. In this way, specialization contributed to their stationarity. Since I am considering exchange in the post-slave export era, the commodities supplied by these individuals consisted mostly of ivory, beeswax and wild rubber. Despite the fact that slavery was prohibited in Angola in 1836, however, slaves continued to be an important source of profit to traveling traders who obtained slaves both for illegal sale to coastal traders[11] and for sale to other African communities.

In the 19th century, most of interior West Central Africa consisted of disparate communities ruled by chiefs who decided over disagreements among their subjects, including those that dealt with credit and exchange. As Livingstone observed: "So far as I can at present understand, there are no such things as nations or kingdoms in the interior of Africa" (1963 [1856]: 410).[12] It would be exaggerated to say that these societies were entirely stateless. Indeed, parts of the region were at times governed by a Marotse "kingdom,"

[9] Use of the term "subjects" here is probably misleading. In many cases, village chiefs/headmen were not so much rulers elevated above other villagers, but were rather fellow community members who performed certain distinct and publicly recognized functions like arbitration.

[10] While some indigenous pre-colonial agents inside the remote interior of West Central Africa migrated within the areas composing this region, very few migrated outside of it and these were not producers (on those who did see fn. 6). According to Capello and Ivens, "The natives of T'Chiboco" for instance "seldom travel beyond their own country, and it is a rare sight to behold a caravan of Ma-quioco journeying westward for the purposes of trade" (1969 [1882]: I 225). Similarly, Serpa Pinto notes: "The Luchazes are little given to traveling, and rarely leave their villages" (1882: 255). Harding likewise records about the Bantua that they "very rarely travel out of sight of their grassy kraals" (1905 [1900]: 307).

[11] According to Crawford, for instance, the Governor at Benguela allowed illicit slave trading to go on under his watch (1914: 28).

[12] See also Capello and Ivens who commented that among the people of the interior "relations with strangers are dictated by circumstances, and it is only in extraordinary cases that one can suspect that such a thing as a law exists" (1969 [1882]: II 242). Elsewhere they similarly note that while, "In Europe, when contracting parties have reason to be discontented with the working of a contract, it is a usual thing to have recourse to arbitration to settle the dispute; but . . . that was not the custom in Africa . . ." (Capello and Ivens 1969 [1882]: II 49).

as well as a Lunda "kingdom," which was later followed by a Chokwe "kingdom" and several others. Thus there existed multiple indigenous states in Central Africa.

What is important to recognize, however, is that the relationship of ruler to ruled in these societies was considerably less formal than a modern Western notion of government would imply. Furthermore, the presence of numerous sovereigns created a vacuum of authority for interactions involving the members of different communities. In this sense, it is reasonable to speak of these societies as "quasi-stateless"—not in that rulers or community norms for resolving disputes did not exist—but rather in that mechanisms of enforcement between communities and, to a lesser extent, within communities were overwhelmingly informal.[13] This fact likely influenced the way that European travelers Capello and Ivens characterized many interior rulers when they called them "pseudo-monarchs" (1969 [1882]: I 183).

On the European side, crown-established governors ruled Portuguese settlements on the coast and oversaw trade posts they set up slightly further inland. Of course, the laws of these settlements did not formally bind Africans in the interior.[14] Nor did the customs of interior African communities formally bind the inhabitants of these settlements. Like European settlers on the coast, indigenous middlemen—the Ovimbundu for instance—were not formally constrained by the customs of the interior communities they interacted with. Thus the presence of multiple states in West Central Africa—both those of indigenous communities and those of European settlements—created ungoverned interstices in the interactions between these people. No formal authority existed to police interactions between the members of these groups.

[13] Even where colonial outposts had been established, formal authority was not really effective. For instance, as Arnot commented: "Though Bailundu and Bihe are within the province of Benguella, Portuguese authority has not very much influence there" (1889: 111). Or as Harding stated: "The Bantua, or river-people, who reside in this district [North-Western Rhodesia], recognise that they are under the English . . . except for that, they exist in happy ignorance of rule, or owning any submission to any Government whatsoever" (1905 [1900]: 306). See also, Johnston (1893: 59).

[14] With the exception of those living in such settlements. Even here, however, because of the ability of native Africans in these settlements to flee and establish residence elsewhere, Portuguese law, for instance, often did not effectively constrain the behavior of African residents.

2.1 The Threat of Violent Theft

To profit, middlemen needed to obtain the goods of producers in the interior of Central Africa and bring them to outlying communities and coastal exporters. These goods could be obtained in one of two ways: peaceful trade or violent theft. In connecting stationary producers with people outside the narrow bounds of their communities, middlemen had the capacity to enable producers to realize significant gains from exchange they would have been otherwise unable to capture.[15] The fact that they tended to be stronger than the communities of producers they interacted with, however, created a situation in which middlemen were tempted to use force rather than trade to realize their ends. Thus a potentially highly beneficial situation for producers could easily turn into a massively harmful one.

Like all behavior, the decision to engage in banditry over trade is guided by the relative marginal cost and marginal benefit of these alternative modes of action. Generally speaking, sufficiently superior strength lowers the marginal cost of plunder below that of trade as a means of obtaining desired goods. In other words, where an individual is strong enough to take what he wants with little or no resistance, it is cheaper to steal than to pay for the objects of his desire. His payoff maximizing strategy is therefore to violently overwhelm weaker agents.

Two primary features of middlemen accounted for the fact that they often constituted the stronger force in interactions with interior producers. First, as noted above, middlemen were the source of modern weaponry for producers. Producers by themselves had no access to guns except by way of those sold or given to them by traveling traders. By controlling the quantity and quality of firearms reaching interior communities, they could effectively secure their strength superiority, giving them a decisive advantage should they decide to attack these communities. This advantage was heightened by the fact that, usually, "in the interior . . . the villages are open and unprotected," making producers easy targets for better-armed middlemen (Serpa Pinto 1881: I 177). Clearly, this advantage was not always sufficient to ensure victory in an attack. If a caravan was sufficiently small and the community they attempted to plunder was sufficiently large, better weaponry

[15] As two travelers to the interior put it: "Commerce, by obliging them [traveling traders] to make repeated journeys, carries with it, as a necessary consequence, the establishment of relations and the making of contracts with distant peoples" (Capello and Ivens 1969 [1882]: II 18).

was meaningless. Of course, overcoming this potential obstacle to banditry was not all that difficult. Middlemen simply needed to be selective about the communities they targeted for attack.

Second, middlemen were highly mobile and producers highly stationary. This meant two things for middleman success in plundering expeditions. On the one hand, they could always return to the coast or their home bases near the coast and gather additional members if greater numbers were needed to succeed in violently stealing from interior communities of producers. Perhaps even more importantly, however, the relative immobility of producers meant that middlemen could escape from conflict with their booty by fleeing to the coast without much worry that they would be overtaken later by bands of producers who would need to locate, track down[16] and retake what had been stolen.[17]

Middlemen used their superior strength to violently overwhelm communities of stationary producers and steal what they desired when they could do so (see for instance, Harding 1905 [1900]: 93; 108). Left unchecked, caravans "profited by rapine and robbery in passing through countries where people did not possess guns." Middlemen "robbed [stationary producers'] granaries, and their mortars, and other articles of household furniture, to make fires for cooking the stolen food" (Cameron 1877: 393; 253). Likewise, Johnston recorded what he understood as "the natural predisposition of the African to steal from the tribe whose country he is passing. Of course it is called foraging, but it means in many instances that hundreds of men are set free to take what they want by force from the villagers" (1893: 40-41).[18]

Caravans sometimes entered a community, stayed for several days or weeks while they conducted their business, and then left the community to move on to the next one or return to the coast. In this case, violent caravan

[16]According to Crawford, agents in West Central Africa at this time also frequently changed their names (1914: 22-23). This, of course, would have contributed to the difficulty of tracking down violent middlemen. It remains unclear, however, how pervasive this practice was.

[17]A third reason for middlemen's strength superiority could also be added. Namely, the fact that they were mobile and producers were stationary meant that middlemen had the ability to initiate surprise attacks on communities of producers. This may help to explain Serpa Pinto's comment: "It is a noteworthy circumstance connected with wars in this part of the Africa, that the attacking party is ever the victor" (1881 I: 178).

[18]As Gibbons put it: "My impression is that more trouble with native tribes originates in the overbearing conduct of the white man's servants, [and] porters . . . than in any other cause" (1904 [1898-1900]: I 67).

members would pillage villagers at night during their stay and then leave before morning when the robbery would be discovered. When Cameron, for instance, was staying in Waguha he records that a caravan of Warua "carrying oil to the lake to exchange for the salt of the Uvinza, camped near us; and in the morning all my goats, excepting Dinah and one given me at Ujiji, were missing. The Warua had also departed" (1877: 226). Livingstone documented this problem as well. Referring to a caravan leader named Dugumbe Hassani he records: "[O]ne of Dugumbe's party seized ten goats and ten slaves before leaving, though great kindness had been shown" (1874 [October 18, 1869]: II 29).

Caravan leaders often made this bad situation worse by encouraging their groups to steal from the villages they traveled to. Leaders were usually responsible for providing their group's provisions on the road and provisions became very costly when caravans were large (see, for instance, Serpa Pinto 1881: I 165). Theft was thus sometimes promoted as a cost-cutting measure. As Cameron observed, for example, "At Kwakasongo there is an Arab settlement of some size . . . they send out their caravans . . . These fellows get no pay, but are allowed to loot the country all round in search of subsistence and slaves" (1877: 259).

A second mode of banditry involved the capture of villagers who would be taken elsewhere and sold as slaves. In this case, upon exiting a community, violent caravan members would kidnap community members or a community's slaves. Cameron observed this practice numerous times. At one point he notes that: "a Portuguese caravan had been within five miles of Kamwawi, destroying villages, murdering men, and carrying off women and slaves" (1877: 292) and points out that "On the lines occupied by the Portuguese" slaves "are nearly always obtained by rapine and violence" (1877: 472). Later, he records: "At starting, the whole caravan may have numbered seven hundred, and before leaving Urua they had collected over fifteen hundred slaves, principally by force and robbery" (1877: 331; see also Harding 1905 [1900]: 124; 138;[19] Livingstone 1857: 180; 297; Livingstone 1960 [1853]: 277; Livingstone 1963 [1853]: 12).[20]

[19] The "Mambari" referred to in these passages are the Ovimbundu.

[20] Harding summarized the potential problem of theft by stronger traveling traders when he noted "the arbitrary and unfair treatment to which the natives are at times subjected from these irresponsible gentlemen . . . They demand carriers and forget to pay them; they commandeer food and leave I O U's as a means of settlement, and give Birmingham composition shells in the place of real undala . . . and without any unnecessary ostentation

Producer trust towards middlemen might have assuaged producers' perceived threat of violent theft by these individuals. Unfortunately, however, precisely because this perception was often justified, such a feeling did not for the most part exist. As strangers and, in many cases, foreign strangers who they might never see again, traveling traders were not looked upon as particularly credible. This explains the frequent "mistrust which the appearance of a European, or even of a half-caste, excites in the interior of Africa" (Capello and Ivens 1969 [1882]: I 164).[21] It also sheds light on Livingstone's observation that "the sight of a white man infuses a tremor into their dark bosoms, and they seem relieved when fairly past without my springing upon them," or similarly, Harding's comment that "on our near approach the majority of the natives seek refuge in the neighbouring bush till they are satisfied that our intentions are not hostile or rapacious" (Livingstone 1963 [1855]: 249; Harding 1905 [1900]: 238). For these reasons, traveling trader banditry was an important concern among interior African producers. As one traveler put it: "The people all fear us and they have good reason for it in the villainous conduct of the blackguard half-castes[22] which alarm them" (Livingstone 1874 [April 3, 1871]: II 113).

2.2 Modeling the Threat of Violent Theft

Modeling the threat of violent theft that producers confronted is straightforward. Consider an economy of complete and perfect information where agents play the game described below. Because they are stationary and sufficiently weaker than caravans of middlemen, communities of producers do not have a choice about whether or not they will interact with middlemen. If middlemen approach them, they cannot avoid interaction. Multilateral punishment, which requires the ability to terminate future interaction in the event of non-cooperative behavior, is therefore not an effective strategy for preventing banditry here. While producers do not control whether or not they will interact with middlemen who approach them, they do control a different variable of the game–how much they produce.

decamp at the witching hour of night . . ." (1905 [1900]: 354, see also, 357).

[21] Or, as one Portuguese agent observed, the Africans "imagine that the whites have no sincerity, and only turn their actions to their own advantage against them" (Costa 1873: 202). Translation from Oppen.

[22] Many traveling traders were "half-castes"—people of mixed European and African descent resulting from Afro-European interaction.

Producers move first and decide whether to produce for trade, which means producing a relatively large quantity of goods that they may either consume or use for immediate trade with caravans that approach them, or whether to produce for subsistence, which means producing a small quantity of goods that is just larger than that needed to sustain their personal consumption. Production for trade therefore involves a "surplus" stock of goods that affords producers additional consumption and additional trade, while production for subsistence involves a stock just large enough to sustain the population and permits only a minimal level of trade. Caravans of middlemen move second and choose to do one of the following: stay home, i.e., do not travel to communities of producers at all, travel to a community of producers and trade, or travel to a community of producers and plunder. From the discussion in Section 2, assume that a caravan's attempt to plunder is always successful and met without resistance.

If producers produce for trade and middlemen stay home, both receive d– what each can earn without interacting with the other. If middlemen trade, both producers and middlemen receive a higher payoff from exchanging, but since traveling to the interior is costly, producers earn b while the total payoff to middlemen is c, where c is equal to b minus the cost of travel. If middlemen plunder they receive an even higher payoff yet, which when travel expenses are deducted gives them a. Producers, on the other hand, receive their lowest payoff in this case, $-d$.

The situation is similar if producers produce for subsistence, but the payoffs are lower because a smaller stock of goods is available for producers to consume, middlemen to violently take if they choose to plunder, and producers to trade with middlemen if middlemen decide to exchange. Only middlemen's payoff from staying home, which is unaffected by the stock of goods producers keep on hand, does not fall when producers produce for subsistence. Thus if producers produce for subsistence and middlemen stay home, middlemen continue to earn d, but producers earn less because the inconvenience of producing just enough to sustain the community is costly yielding them a payoff of only h, where where h is equal to d minus the value producers place on the foregone stock in consumptive uses. If middlemen plunder, producers receive $-h$, which is their smallest payoff when they produce for subsistence but larger than what they receive when middlemen plunder and they produce for trade ($-d$). Middlemen in this case earn e, which is more than they earn by trading, but because there is so little to steal, is smaller than the payoff of staying home (d). Finally, if middlemen trade, producers earn f, which is smaller than what they earn from trade when they produce for trade (because there is a smaller stock available for trading), but still their highest payoff when they produce for subsistence. Middlemen in this event earn g, their smallest payoff, where g is equal to f minus the cost of travel. To summarize: $a > b > c > d > e > f > g > h$, and $b + c > a - d$, which is to say that the higher level of trade is socially efficient. This game is depicted in Figure 1.

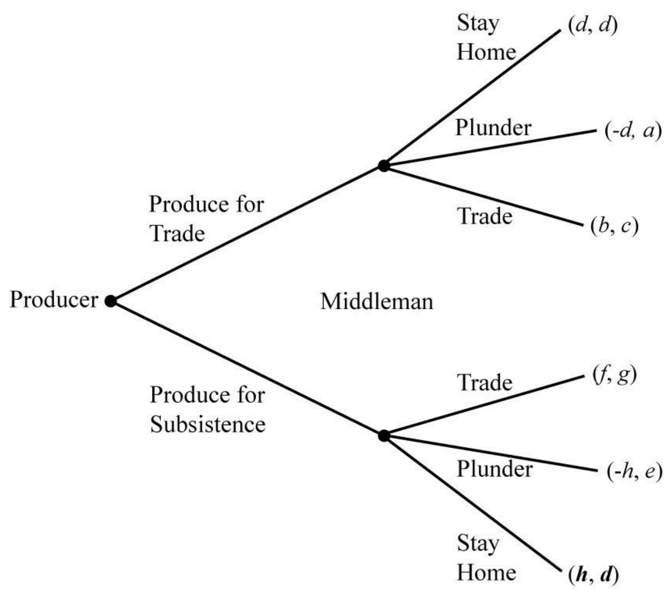

Figure 1. The Threat of Violent Theft

The unique subgame perfect Nash equilibrium of this game involves producers producing for subsistence and traveling traders staying home. Because producers produce only what is needed to sustain themselves, there is little available for theft, creating a situation for middlemen where staying home yields a higher return than plundering. If they produce more, producers increase middlemen's payoff from banditry by making more available to steal. This entices middlemen to plunder, generating losses for producers. To avoid these losses producers keep stocks low, which prevents middlemen from traveling to them. In equilibrium producers earn h and middlemen earn more, d. Producers "pay" for their strength inferiority by incurring the cost associated with reducing stocks to a level that prevents middlemen from engaging in banditry.

Although producing at a subsistence level overcomes the problem of violent theft, it is hardly a satisfactory solution from the perspective of producers. In discouraging middlemen from interacting with them, producers also forego significant potential gains from trade. The threat of being plundered, however, did not prevent trade between middlemen and producers in the late pre-colonial period. Indeed, legitimate exports supplied by remote interior producers leaving Angola alone amounted to close to $4 million per year by the end of the 19th century (Vellut 1979: 101). How were producers able to overcome the threat of violent theft posed by trading with bandits?

3 A Clever Use of Credit: You Can't Steal What's Not There, But You Can Trade with It

Though the outcome described above in which middlemen stay home is superior to that in which producers produce for trade and middlemen plunder them, it is far from the socially efficient outcome, which requires that producers avoid plunder *and* that producers and middlemen realize the full gains from trade. Confronted with this situation, producers were interested in devising ways in which they could transform middlemen's incentive from banditry to peaceful trade. To do this required them to alter the cost/benefit structure of these alternative modes of conduct. Raising the cost, or what is equivalent, lowering the benefit of plunder relative to trade would change traveling traders' payoff maximizing strategy. One important way producers achieved this was by using credit.

On the side of late pre-colonial African exchange between middlemen and coastal exporters, credit extended to the former by the latter made exporters vulnerable to *ex post* opportunism on the part of middlemen (Lovejoy and Richardson 1999). However, "credit relations played a decisive role in long-distance trade in the West Central African interior, not only between coastal merchants, *sertanejos* and Mbangala/Ovimbundu middlemen, but also between producers and traders" (Oppen 1994: 396). Two important differences distinguish credit relations on this side of late pre-colonial African trade.

First, here, middlemen were creditors rather than debtors. While evidence regarding the direction of credit between middlemen and stationary producers in the first half of the 19th century is scant, what records are available suggest that on at least a few occasions stationary producers made loans to traveling traders (see for instance, Baptista 1873 [1805]). Records regarding the direction of credit in our period of interest, however, are very clear. They indicate both that credit was common in interactions between middlemen and producers and that the latter were debtors rather than creditors of the former.[23] I explain why this was the case below.

Second, rather than creating an opportunity to cheat as it did in relations between middlemen and coastal exporters, credit in this context operated to *prevent* violent theft. By requiring that exchange be conducted on credit, producers were able to transform traveling traders' incentive from adopting a "plunder and run" strategy to one of repeated peaceful trade instead. This difference is particularly noteworthy given that we normally think about credit as the cause rather than the solution to problems plaguing exchange.

Producers faced a dilemma. To realize the gains from trade, they needed to raise middlemen's payoff from trade above middlemen's payoff from staying home. This was possible by producing for trade. Producing for trade, however, simultaneously raised middlemen's payoff from banditry, making this middlemen's profit-maximizing strategy. To avoid plunder, producers had to produce for subsistence, which made both trade and plunder less profitable for middlemen than staying home. To capture the gains from trade, producers had to produce for trade, which made trade for middlemen profitable but made plunder even more so.

To capture the gains from trade (and achieve the socially efficient outcome) producers required a strategy that would make the payoff from plunder low, like when they produce for subsistence, but make the payoff from trade high, like when they produce for trade. Credit made these two seemingly incompatible goals possible. By keeping current stocks low but exchanging with middlemen on credit, producers could produce for subsistence, thus deterring plunder, but still enable trade, allowing both sides to reap the benefits from exchange. In doing this, producers simultaneously kept middlemen's payoff from plunder below their payoff from trade and raised middlemen's payoff from trade above their payoff from staying home. Credit agreements are uniquely suited in this capacity because while middlemen cannot steal goods that do not yet exist, credit enables producers to trade with goods that do

[23] It is not known for certain whether interest was charged on these loans. We do know that interest was sometimes charged on loans between members of different villages; however, there does not seem to be any evidence in the historical records to suggest that this was the case in loans between middlemen and producers.

not yet exist.

To see explicitly how the use of such credit arrangements enhanced producer-middleman exchange, consider the game in Figure 2. This game is like that from Figure 1, only now when producers produce for subsistence, let middlemen's trade strategy be trade on credit rather than simultaneous exchange.

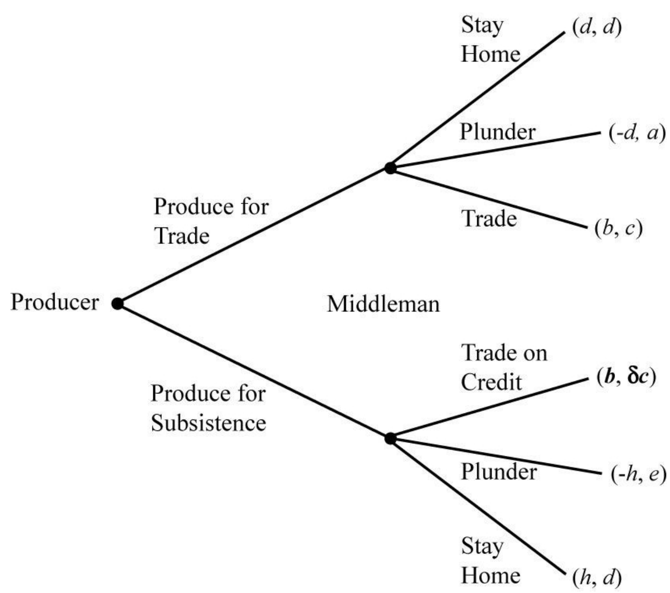

Figure 2. A Clever Use of Credit

The payoffs on the producing for trade branch of the tree remain the same as before. Likewise, the payoffs from {produce for subsistence, stay home} and {produce for subsistence, plunder} remain the same. However, because it now involves trading on credit, which increases the volume of exchange that is possible, the payoff of trade under subsistence production rises. For producers it rises to the same level as when they produce for trade and middlemen trade. Producers thus earn b. Middlemen, on the other hand, earn δc, where δ is a caravan's discount factor and $\delta \in (0, 1)$. The reason for discounting middlemen's payoff is straightforward. Because trade in this case is conducted on credit, they only receive all or part of the gains from exchange via repayment in the subsequent period.

What course of action a caravan of middlemen now finds most profitable depends on its discount rate. Where $\delta > d/b$, trade is more profitable for the caravan than staying home. Where δ does not satisfy this inequality, the caravan finds staying home more profitable. In equilibrium only those caravans that will trade travel to communities of producers and exchange (on credit), while those that pose a threat of plunder stay home. Plunder is therefore avoided and producers and middlemen who are sufficiently patient realize the gains from exchange.

The use of credit for this purpose in producer-middleman exchange was ubiquitous. As the traveling trader, Henrique Augusto Dias de Carvalho put it: "the [traveling] trader sees himself forced to give credits, and this is indispensable for anyone who takes the risk of trading in such a region, if he wants to do it with any success" (1890: 700).[24] Realizing that there was little to steal, traveling traders who traveled long distances to interior communities faced two options. Their plans for banditry foiled, they could either leave empty handed (after having incurred a costly trip to the interior) or they could engage in peaceful trade by offering goods on credit to interior producers. The former route could often involve losses, while the latter created the potential gain (albeit a lesser gain than if plundering remained profitable).

Producers' efforts to keep stocks of "thievable" goods low was considerably eased by the fact that many of the goods desired by middlemen, for instance ivory, crops and wax, required harvesting before they were available in exportable form. These goods remained "in the ground" so to speak until collected by producers. Obviously, however, producers could not reduce their stocks of goods to zero. They needed to keep some provisions on hand to survive. Additionally, some goods desired by traveling traders–for instance slaves–could not be made unavailable in the way that others could. Thus there was always something available for stronger middlemen to steal if they so desired. Nevertheless, by significantly reducing their holdings, producers could concomitantly reduce the benefits of violent theft to middlemen bent on banditry. Furthermore, it was unnecessary for producers to reduce their stock of goods to zero to have the desired effect. As long as stocks were kept low enough such that the value of the goods available for plunder was lower than the payoff from trading on credit, middlemen would trade with rather than plunder producers.

In order to transform the incentive of middlemen from banditry to trade, producers needed to make sure that the amount of goods they kept on hand was perpetually low. To do this, they protracted the process of debt repay-

[24] Translation from Oppen (1994).

ment as long as possible (see for instance, Cameron 1877: 47; Livingstone 1874 [June 15, 1868]: I 305; Dias de Carvalho 1890: 699). Consider, for example, the following observation of Max Buchner, a European traveler to the Upper Zambezi and Kasai:

> "Among the princes of the interior as far as it is known to me, who are outstanding sellers of both slaves and ivory, the old trade custom rules that the traders from the coast have to submit all their goods upon arrival. *The prince receives these goods as a debt which he pays back only later and gradually . . . The [traveling] trader often has to wait a long time and be patient . . .*" (Buchner 1883: 82) [emphasis added].[25]

The words of European traveler to West Central Africa, Paul Pogge, highlight this practice as well:

> "The native would be little inclined to gather the products of his country, were he not given the payment in advance . . .[*Ambaquista* middlemen—A.v.O.] can buy some products in the interior, these being brought to them by the natives and paid [immediately] . . . In general, however, they cannot purchase very many commodities in this way but instead give the native credit. Where rubber occurs in the forest, and where the elephant occurs, the Baptist [*Ambaquista*] gives payment in advance to the elephant hunter for so and so many tusks, and to the one who wants to bring rubber or beeswax payment for so and so many pounds of rubber or wax. *These people then have to wait for months and years until their debtors satisfy them . . .*" (Pogge 1890: 16) [emphasis added].[26]

In fact, when old debts were about to be retired, village headman made an effort to create new debts with traveling traders to keep the cycle going (Miller 1970: 193).

Furthermore, this credit arrangement created a strong incentive for middlemen to repeatedly exchange with producers, much to producers' benefit. In fact, it appears as though both producers and traveling traders more or less correctly understood this fact. Consider, for example, the following passage:

[25] Translation from Oppen (1994).

[26] Translation from Oppen (1994).

> "Neither the Muatianvua [Mwant Yav], nor the chiefs in general complete the payment of their transactions, and this is, they say, with the aim that the leaders of the caravans with whom they negotiate should return to them with more business. They fear that if satisfied the leaders will not come back, and that in consequence they would be deprived of more trade in cloth, beads, powder, guns, and salt which they need . . ." (Dias de Carvalho 1890: 693).[27]

In order to receive an installment of payment on their loans, traveling traders were required to return to the communities of producers they lent to. The fact that credit was used meant that their return trips would always be under conditions in which the benefit from another round of peaceful trade would outweigh the benefit of plunder. In the first place, there were no (or few) goods available to steal, as producers did not collect goods until a credit agreement had been created with middlemen for the delivery of the goods at some point in the future. And when middlemen returned to collect their payment, there was again nothing for them to steal. The goods desired by producers that middlemen extended to them on credit—for instance, alcohol, cloth and tobacco—were typically the kind that producers consumed shortly after receiving them. Middlemen were therefore not able to extend goods to producers on credit and then retake them by force when they returned to a village to receive an installment of debt repayment. The only goods that remained on hand were those already owed to them, and it does not make sense to talk about middlemen taking these goods by force.

By indebting themselves to middlemen, producers transformed their status in the eyes of these traders from targets of violence to productive assets. In order to produce the goods necessary to repay their debts, producers needed to be alive and well. It was therefore in the interest of middlemen to ensure the health and safety of those they made loans to. In short, the use of credit created a stake for middlemen in the well-being of producers. To protect their valued investments, middlemen had an incentive to abstain from using violence against producers who owed them goods and to prevent other middlemen from using violence against these producers.[28]

[27] Translation from Oppen (1994).

[28] Because in producer-middleman credit agreements, producers–the stationary and weaker parties to interactions–were the debtors, loan default was not a serious concern for middlemen. If a producer defaulted on repayment, a middleman could recoup a part

4 Tribute as a Risk Premium

By keeping their stock of "thievable" goods sufficiently low and requiring that exchange with middlemen be on credit, producers increased middlemen's benefit from trade while reducing the benefit of banditry. This transformed sufficiently patient middlemen's incentive from plunder to peaceful trade. Furthermore, the use of credit created an incentive for middlemen to protect indebted producers, who became valuable investments, from violence. Impatient middlemen, on the other hand, simply stayed home.

Things were not quite so easy, however, for all producers. For reasons pointed out above, some producers were constrained in their ability to reduce the size of their "thievable" stocks. In some communities where wealth was predominantly held in the form of humans (slaves) and livestock, although stocks could be reduced to some extent, it was not possible to reduce stocks low enough to prevent sufficiently impatient middlemen from finding plunder profitable.

Larger stocks in these communities meant that the payoff from plunder here was also higher. As long as stocks were not so large as to make banditry more profitable than trade regardless of a caravan's discount rate, sufficiently patient caravans continued to find trade the most profitable course of action. In other words, imagine a community which, because it holds much of its wealth in the form of humans and livestock, cannot reduce its stock of goods as low as others who do not hold most of their wealth in these forms. The benefit of plundering this community is therefore higher, Ψ, where $\Psi > e$. Despite this, if $\Psi/b < 1$, there exists some caravan that will continue to find the payoff from trading (δc) greater than the payoff from plundering (Ψ). Specifically, where $e/b < \Psi/b < 1$, caravans with discount rates that satisfy $\delta > \Psi/b$ will trade.

However, caravans with discount rates where $\delta < \Psi/b$ will not. In fact, because $\Psi/b > e/b$, some of the caravans that would rather stay home than trade with producers who can reduce their stock of "thievable" goods suffi-

of his loan by taking what the producer had available on hand. For reasons already discussed, in many communities this was, to be sure, not much. But in those communities where stocks could not be reduced substantially (see the discussion in Section 4), there was considerably more for middlemen to take in the rare event of default. For instance, when the traveling trader "Hassani of Dugumbe got [a] chief into debt" and the chief could not repay, Hassani "robbed him of ten men and ten goats to clear off the debt" (Livingstone 1874 [November 15, 1869]: II 35).

ciently, would rather plunder producers who cannot do this than stay home. For these middlemen, banditry is the most profitable course of action in this case. Thus while producers who could reduce their stocks sufficiently were safe from plunder and could trade with bandits, those who held their wealth in the form of humans and livestock could not. Sufficiently patient middlemen would trade with them, but impatient ones would plunder them.

To overcome this problem communities of vulnerable producers demanded tribute from traveling traders who approached them for exchange. Typically, village headmen were the gatekeepers to producers and required middlemen to meet their tribute demands before trade relations could be consummated. As European traveler to the remote interior, David Crawford, put it: "until in some way you have paid this [head]man's demands, normal relations with the tribe in food-buying are not supposed to be established. You are boycotted, and neither by charter nor barter can you get anything from them" (1914: 118). Similarly, the prominent *sertanejo*, Antonio Francisco Ferreira da Silva Porto noted that to enable trade with producers, tribute payment

> "'*was necessary to open the door!*"' We tried to find the solution to this enigma and found out that it was necessary to give some pannos [yards of cloth—A.v.O.] to obtain permission for the people of the caravan and of the country to buy and sell provisions and other commodities, without which nothing could be done" (Silva Porto 1885 [1880]: 580).[29]

For instance, at one village, the caravan led by Capello and Ivens initially refused to pay tribute. As a result, the chief "had issued orders . . . not to sell them a single fowl" (1969 [1882]: I 150). Similarly, Harding notes that chief Okewa of the Baluchazi "must have cash or the equivalent prepaid" to allow his group across the river separating them and Okewa's village (1905 [1900]: 235). As he indicates elsewhere, failing to pay the tribute demanded by a headman "would have been disastrous; he would have refused me guides; [and] looked upon . . . my whole conduct as hostile . . ." (1905 [1900]: 148).[30]

[29] Translation from Oppen (1994).

[30] Harding also notes that when tribute was not paid, news of this was sometimes sent to neighboring villages of same tribe as a warning about the approaching caravan. A "present in return is looked for, and if not forthcoming, the tale of your meanness outpaces your steps and reaches the next kraal long before your arrival" (1905: 142).

The way that tribute worked is straightforward. Let caravans of middlemen be heterogeneous in discount rates such that ρ is the proportion of caravans with discount rates that satisfy $\delta > \Psi/b$ and $1-\rho$ is the proportion of caravans with discount rates that do not satisfy this inequality. Where producers cannot reduce their stocks low enough such that the resulting benefit from plunder is Ψ, their expected payoff of producing for subsistence and trading on credit is given by: $\rho(b) + (1-\rho)(-h)$, which is greater than producers' expected payoff of producing for subsistence and not trading on credit for any $\rho > 0$. Sufficiently patient middlemen earn $\delta c > \Psi$ when producers agree to trade on credit, and Ψ when they do not. This being the case, producers could demand tribute T from sufficiently patient producers in order to exchange with them on credit, where $T \leq \delta c - \Psi$, and these middlemen would pay this.

Obviously, if a caravan of middlemen was excessively impatient and so intended to plunder a community, demanding tribute was worthless. The stronger caravan would simply overwhelm the community, refuse tribute payment, and go about violently stealing what it desired. For those caravans that were not too impatient, however, demanding tribute worked quite well. Per the discussion above, these middlemen found peaceful exchange more profitable than plunder and thus were willing to pay for the opportunity to trade.

In demanding tribute for access to exchange, producers risked foregoing gains in the amount of $\rho(b) + (1-\rho)(-h) + h$ if middlemen refused to pay. However, producers could reasonably expect this would not be the case. By the time a caravan arrived at a community of producers, it had already incurred the traveling cost of coming to the interior. If it refused to pay tribute at this point, the best it could do was to violently take what was there, yielding a payoff of Ψ, which is less than what it could earn by paying the tribute and trading on credit, $\delta c - T$, where $T \leq \delta c - \Psi$.[31] When a community of producers demanded tribute from middlemen in order to have access to exchange opportunities with its members, sufficiently patient middlemen would therefore pay it (besides those others cited here, see for instance, Arnot 1889: 71; 80; 102; 135; 136; 137; 151; 159; 204; Arnot 1893: 26; Harding 1905 [1900]: 81; 95-96; 142; 148; 290; Graca 1890 [1846]; Serpa

[31] It should also be noted that as the proportion of impatient caravans in the population increases, the credibility of producers' threat to not trade on credit with those who refuse to pay tribute increases as well. As $\rho \to 0$, the gains producers forego by adhereing to this strategy fall.

Pinto 1881: I 67-68; I 90; I 175; I 228-229; Johnston 1893: 111; Capello and Ivens 1969 [1882]: I 87; I 116-117; I 137-138; Livingstone 1963 [1854]: 9; 33; Cameron 1877: 77).[32] Thus "it is not surprising that tribute is paid to the [every] village headman where one sets up the camp" (Silva Porto 1885: 577). Or, as one European traveler expressing his frustration with the ubiquity of tribute put it: "The previous travelers and traders seem to have been very timid, yielding to every [tribute] demand, however unreasonable, for the most senseless [tribute] demands are made upon us" (Livingstone 1963 [1854]: 98).

Tribute demands thus functioned as a risk premium charged by communities of vulnerable producers. Tribute helped to protect producers against the risk of interacting with traveling traders who, as a general class, were comprised of some patient and some impatient members. In particular, it acted as a tax on patient middlemen used to subsidize the banditry of violent impatient middlemen. By taxing middlemen who expressed a desire to exchange, producers were able to extract compensation from patient middlemen (who traded with them) to cover losses imposed by impatient ones (who plundered them).[33] This helps to explain Francois Coillard's remark about the Luvale chief—Chief Kakenge—when he noted the "homage or rather a tax he exacts from black Portuguese traders who enter his country" (1897: 611).

The records of several travelers suggest that this "tax" was sizable. The first two Portuguese-speaking European traders to cross Africa between 1805 and 1814, for instance, brought 2000 *milreis* worth of goods with them in their travels to pay such tributes (Baptista 1873: 200). Similarly, Silva Porto,

[32] These citations all involve traveling Europeans' discussions of the pervasiveness of tribute demands and how they were required to pay them. While many of these travelers were not themselves middlemen, many of them desired to trade with producers they encountered as a means of supplying themselves and their men. Furthermore, from producers' perspective, these travelers were often viewed as middlemen even when informed they were not so.

[33] Where the total population of middlemen is P, producers generate ρPT in revenue from demanding tribute, which is used to help offset losses in the amount $(1-\rho)P(-h)$. To completely offset the losses imposed by impatient middlemen, $T = -[(1-\rho)(-h)]/\rho$. As already noted, however, the amount producers could demand in tribute was bound at the upper limit by: $\delta b - \Psi$. Whether or not full compensation was possible therefore depended upon: how much greater the payoff of trade was over the payoff of plunder for patient middlemen (which in turn depends on how patient patient middlemen are), the proportion of impatient middlemen in the population, and the value of the stock lost in the event of plunder (which, of course, depends on the extend to which producers are able to reduce their stocks).

who traveled from Bihe to the Central African interior, carried close to five percent of the value of his cargo in cloth for each trip to be used as "hospitality gifts" as well (Silva Porto 1885: 24). And Cameron notes: "In passing through Ugogo, we had altogether paid as tribute seventy-seven colored cloths, more than two hundred dodi of common cloth, a coil of wire, and three pounds of beads. This at Zanzibar prices would amount to five hundred dollars, and in Ugogo represented nearly double that amount . . ." (1877: 98).[34] The goods demanded as tribute—sometimes called *musapu*—varied. Arnot, for instance, records the headman in the town of Herero "demanding from us an ox and some tiger-skins" (1889: 102). According to Livingstone, Chief Catende "demand[ed] either a tusk, beads, a man, cooper armlets, a shell, or we should not be permitted to enter his . . . presence" (1963 [1854]: 98; see also: Graca 1890 [1846]: 410; Silva Porto diary entries 1986 [January 17th and 22nd, 1848]: 336-337). Often, though not always, tribute took two general forms: goods that producers consumed immediately or shortly after receiving them–for instance, an ox that would be slaughtered and eaten right away, alcohol or tobacco–or European novelities (e.g., a watch) that were not sought by middlemen to bring to coastal European traders for export. The reason for this is clear: to avoid tribute payments contributing to vulnerable communities' stocks of "thievable" goods, which could be plundered by impatient middlemen. If tribute was either consumed quickly or consisted of goods middlemen were not looking for, producers did not need to fear losing it to banditry by a violent caravan.[35]

At least on the surface, tributes were demanded from middlemen under

[34] To gain an appreciation for the substantial size tribute demands could take consider the following quote from Arnot: "A Portuguese priest told me I had to give one four-gallon keg of rum, two hundred yards of cloth, two blankets, six shirts, his own silver watch, and some other small things [as tribute]. Senhor Porto never returns from the coast without bringing as tribute far more than this" (1889: 137). See also, Arnot (1889: 136) and Livingstone (1963 [1854]: 98).

[35] The fact that "thievable" goods were sometimes demanded as tribute is attributable to two possible factors. On the one hand, this may reflect that some communities of producers assigned a relatively low probability to being plundered by a caravan of violent middlemen. On the other hand, even though the tribute a community received–say a slave–would ultimately be stolen by a violent caravan, in the time between when the community received it and the time it was stolen, the employment of the slave yielded some benefit to the community. If the slave were needed enough, this benefit could outweigh the benefit of a non-thievable tribute even though its employment would not be permanent. In this case, the slave would be preferred as tribute to say, an ox, even though the former was at risk for theft while the latter was not.

the auspices of showing respect. Travelers, however, looked upon tribute demands as necessary albeit unfortunate "extortions, exactions and vexations" to satisfy "shamelessly greedy" natives (Livingstone 1963 [1853-1856]: 116, 109).[36] In fact, as Oppen (1994: 380) notes, partly due to the pervasiveness of tribute demands, Portuguese-speaking traveling traders considered "greed"—called *ambicao* or *cobica*—to be the outstanding attribute of West Central Africans (see for instance, Silva Teixeira 1940: 237; Anonymous 1940: II 25; Silva Porto 1885: 585; Johnston 1893: 77).[37]

Whether or not respect or sheer greed were in fact actual reasons for demanding presents, my argument suggests that by protecting producers against some of the risk of interacting with middlemen, such demands also played an important role in promoting exchange. Key to its usefulness as insurance, tribute needed to constitute a net gain to the recipient producers. This ruled out, for instance, the possibility of present reciprocation as was practiced in gift exchange arrangements utilized between many villages.[38] Thus although communities of producers often offered traveling traders food or temporary shelter after receiving tribute, these "gifts" were worth substantially less than those they demanded (Miller 1970: 193), leaving a large effective premium in place. Noting this value discrepancy, for example, Livingstone commented: "the Negroes do not seem to have the smallest idea of presents being reciprocal" (1963 [1855]: 253). Harding similarly recorded that chief "Samangala . . . expected from me a present of beads or calico worth twice the intrinsic value of his so-called present" (1905 [1900]: 192; see also 290).

[36] Serpa Pinto's records suggest that traveling traders also sometimes viewed tribute as payment to headmen for protection from village producers who might try and steal from vulnerable caravan members (1881: I 175).

[37] See also, Arnot who referred to tribute demands as "the bane of traveling in Africa" (1889 [August 27, 1885]: 135), Crawford who called tribute demands "exceptionally extortionate" (1914: 122) and Cameron who complained the producers "invent many claims as a means of extorting goods from those passing through their villages" (1877: 164). Silva Porto even referred to the practice of demanding tribute as "devilish" (translation from Oppen 1994) (1885 [1880]: 573).

[38] For an excellent analysis of the gift-exchange system see Landa (1994).

5 Conclusion

My analysis leads to three conclusions. First, individuals can in fact trade with bandits. Conventional wisdom underestimates the market's power to solve the problem of violent theft. Even in the extreme case where weak individuals cannot use multilateral punishment or invest in additional strength to fend off stronger ones, the absence of state policing need not bring exchange activities to a halt. While the potential for violent theft poses a significant threat to the ability of individuals to realize the gains from trade, the benefits of preventing this threat from becoming a reality compel agents to develop informal solutions to the problem of banditry. By altering the cost/benefit structure of trade versus violence, these solutions have in common the fact that they transform stronger agents' incentive from plunder to peaceful exchange.

Second, although credit often serves as the *cause* of commitment problems involving peaceful theft, it serves as a *solution* to the problem of violent theft where one party to an interaction is stronger and more mobile than the other. By minimizing stocks of desired goods and trading on credit, vulnerable parties simultaneously reduce the benefit of violent theft by stronger individuals who are tempted to take advantage of their superior strength and increase the benefit of exchange.

Third, to the extent that some stronger individuals are prone to use force to obtain the goods they desire and others are inclined to trade (owing to a difference in discount rates), agents who are part of a weaker group may be able to protect themselves against the risk of interacting with members of a stronger group by demanding a premium from them in order to exchange. Although permanently weak agents cannot refuse to interact with stronger individuals who want what they have, weak individuals can refuse to exchange *on credit* with stronger individuals because the goods in question do not yet exist. Members of the stronger group who are inclined to trade rather than plunder will therefore pay this premium when it is required for them to enable exchange. This premium helps to offset the losses experienced by members of the weaker group when they interact with members of the stronger group who are prone to use force to obtain what they desire. By compensating vulnerable agents for the risk of interacting with unknown members of the stronger group, this premium makes group exchange possible despite the risk inherent for permanently weaker agents.

References

[1] Anderson, Terry and Fred McChesney (1994). "Trade or Raid? An Economic Model of Indian-White Relations," *Journal of Law and Economics*, 39-74.

[2] Anonymous (1940). "Derrota de Benguella para o sertao," in A. de Albuquerque Felner ed. *Apontamentos sobre a colonizacao dos planaltos e litoral do sul de Angola, Lisboa: Ministerio das Colonias*. vol. 2, 12-27.

[3] Arnot, F.S. (1889). *Garenganze; or, Seven Years' Pioneer Mission Work in Central Africa*. London: James E. Hawkins.

[4] Arnot, F.S. (1893). *Bihe and Garenganze; or Four Years Further Work and Travel in Central Africa*. London: J.E. Hawkins.

[5] Baptista, J.P. (1873). "Journey of the 'Pombeiros'," in R.F. Burton ed. *Lacerda's Journey to Cazembe, and Journey of Pombeiros, etc.*, 169-188; 198-200; 203-233. London: John Murray.

[6] Bates, Robert, Avner Greif and Smita Singh (2002). "Organizing Violence," *Journal of Conflict Resolution*, 599-628.

[7] Bauer, P.T. (1954). *West African Trade*. Cambridge: Cambridge University Press.

[8] Botelho de Vasconcellos, Alexandre Jose (1844). *Annaes Maritimos e Coloniais*. 4a serie. Translation in Burton (1873).

[9] Buchner, Max (1883). "Das Reich des Mwata Yamvo und seine Nachbarlander," *Deutsche Geographische Blatter*, 56-67.

[10] Cameron, Verney Lovett (1877). *Across Africa*. New York: Harper and Brothers Publishers.

[11] Capello, Hermengildo and Roberto Ivens (1969). *From Benguella to the Territory of Yacca*. Trans. Alfred Elwes, 2 vols. New York: Negro Universities Press.

[12] Coillard, Francois (1897). *On the Threshold of Central Africa*. Trans. Catherine Mackintosh. London: Hodder and Stoughton.

[13] Costa, Francisco Honorato da (1873). Letter by the "Director of the Fair of Casanje" to the Governor of Angola, in R.F. Burton ed. *Lacerda's Journey to Cazembe, and Journey of Pombeiros, etc.*, 200-202. London: John Murray.

[14] Crawford, David (1914). *Thinking Black: 22 Years without a Break in the Long Grass of Central Africa*. London: Morgan and Scott.

[15] Dias de Carvalho, Henrique Augusto (1890). *Ethnographia e historia tradicional dos povos da Lunda (Expedicao portugueza ao Muatianvua, vol. 5)*. Lisboa: Imprensa Nacional.

[16] Gibbons, Alfred St. Hill (1904). *Africa from South to North through Marotseland*. 2 vols. London: John Lane.

[17] Graca, Joaquim (1890). "Expedicao ao Muatayanvua. Diario de Joaquim Rodrigues Graca," *Boletim da Sociedade de Geographia de Lisboa*, 9a Ser., 365-468.

[18] Greif, Avner (1989). "Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders," *Journal of Economic History,* 857-882.

[19] Greif, Avner (1993). "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition," *American Economic Review*, 525-548.

[20] Greif, Avner, Paul Milgrom and Barry Weingast (1994). "Coordination, Commitment, and Enforcement: The Case of the Merchant Guild," *Journal of Political Economy*, 745-776.

[21] Grossman, Herschel (1998). "Producers and Predators," *Pacific Economic Review*, 169-187.

[22] Grossman, Herschel and Minseong Kim (2002). "Predation, Efficiency and Inequality," *Journal of Institutional and Theoretical Economics*, 393-407.

[23] Harding, Colin (1905). *In Remotest Barotseland*. London: Hurst and Blackett, Ltd.

[24] Hausken, Kjell (2004). "Mutual Raiding of Production and the Emergence of Exchange," *Economic Inquiry*, 572-586.

[25] Hirshleifer, Jack (1988). "The Analytics of Continuing Conflict," *Synthese*, 201-233.

[26] Hirshleifer, Jack (1995). "Anarchy and its Breakdown," *Journal of Political Economy*, 26-52.

[27] Hirshleifer, Jack (2001). *The Dark Side of the Force*. New York: Cambridge University Press.

[28] Johnston, James (1893). *Reality versus Romance in South Central Africa*. London: Hodder and Stoughton.

[29] Landa, Janet (1994). *Trust, Ethnicity, and Identity*. Ann Arbor: University of Michigan Press.

[30] Leeson, Peter (2004). "Cooperation and Conflict: Evidence on Self-Enforcing Arrangements and Heterogeneous Groups," *American Journal of Economics and Sociology*, forthcoming

[31] Livingstone, David (1963). *Livingstone's African Journal 1853-1856*. Ed. Isaac Schapera, 2 vols. London: Chatto & Windus.

[32] Livingstone, David (1874). *The Last Journals of David Livingstone in Central Africa*. Ed. Horace Waller, 2 vols. London: John Murray.

[33] Livingstone, David (1960). *Livingstone's Private Journals 1851-1853*. Ed. Isaac Schapera, 2 vols. London: Chatto & Windus.

[34] Livingstone, David (1857). *Missionary Travels and Researches in South Africa*. London: John Murray.

[35] Lovejoy, Paul and David Richardson (1999). "Trust, Pawnship, and Atlantic History: The Institutional Foundations of the Old Calabar Slave Trade," *American Historical Review*, 333-355.

[36] McGuire, Martin and Mancur Olson (1996). "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force," *Journal of Economic Literature*, 72-96.

[37] Milgrom, Paul, Douglass North and Barry Weingast (1990). "The Role of Institutions in the Revival of Trade: The Medieval Law Merchant, Private Judges, and the Champagne Fairs," *Economics and Politics*, 1-23.

[38] Miller, Joseph (1988). *Way of Death*. Madison, WI: University of Wisconsin Press.

[39] Miller, Joseph (1970). "Cokwe Trade and Conquest in the Nineteenth Century,"in Richard Gray and David Birmingham eds. *Pre-Colonial African Trade*. London: Oxford University Press.

[40] Neary, H. (1997). "Equilibrium Structure in an Economic Model of Conflict," *Economic Inquiry*, 480-494.

[41] Olson, Mancur (1993). "Dictatorship, Democracy, and Development," *American Political Science Review*, 567-576.

[42] Oppen, Achim von (1994). *Terms of Trade and Terms of Trust*. Hamburg: Lit Verlag.

[43] Pogge, Paul (1880). *Im Reich des Muata-Jamvo*. Berlin: Reimer.

[44] Serpa Pinto, Alexandre de (1881). *How I Crossed Africa*. Trans. Alfred Alwes, 2 vols. Philadelphia: J.B. Lippencott & Co.

[45] Silva Porto, Antonio Francisco Ferreira da (1885). "Novas jornadas de Silva Porto nos sertoes africanos," *Boletim da Sociedade de Geographia e da Historia de Lisboa*, 5a serie, nos. 1, 3, 9, and 10, 3-36, 145-172, 569-586, 603-642.

[46] Silva Teixeira, Alexandre da (1940). "Relacao da viage q ˜fis desta Cidade de Beng. a para as so louar, no anno de 1794," in A. de Albuquerque Felner ed. *Apontamentos sobre a colonizacao dos planaltos e litoral do sul de Angola, Lisboa: Ministerio das Colonias*. vol. 1, 236-237.

[47] Skaperdas, Stergios (1992). "Cooperation, Conflict and Power in the Absence of Property Rights," *American Economic Review*, 720-739.

[48] Skaperdas, Stergios (2003). "Restraining the Genuine *Homo Economicus*: Why the Economy Cannot Be Divorced from its Governance," *Economics and Politics*, 135-162.

[49] Skaperdas, Stergios and C. Syropoulos (1997). "The Distribution of Income in the Presence of Appropriative Activities," *Economica*, 101-117.

[50] Smith, Adam (1965). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Ed. Edwin Cannan. New York: The Modern Library.

[51] Soremekun, Fola (1977). "Trade and Dependency in Central Angola: The Ovimbundu in the Nineteenth Century," in Robin Palmer and Neil Parsons ed. *The Roots of Rural Poverty in Central and Southern Africa*, 82-95. London: Heinemann.

[52] Umbeck, John (1981). "Might Makes Rights: A Theory of the Formation and Initial Distribution of Property Rights," *Economic Inquiry*, 38-59.

[53] Vellut, Jean-Luc (1979). "Diversification de l'economie de cueillette miel et cire dans les societes de la foret Claire d'Afrique centrale (c. 1750-1950)," *African Economic History*, 93-112.