POLICY REFORM IN SUB SAHARAN AFRICA[1]

Paper presented at the Policy Reform and Adjustment Workshop, Imperial College London (Wye Campus), 23-25 October 2003.

Andrew Dorward and Jonathan Kydd

Centre for Development and Poverty Reduction,

Wye Campus, Imperial College London,

Wye, ASHFORD, Kent TN25 5AH

A.Dorward@imperial.ac.uk; J.Kydd@imperial.ac.uk

Abstract

Agricultural adjustment policies in sub Saharan Africa have not delivered substantial increases in agricultural growth. We examine alternative explanations for this and argue that transitions and thresholds in agricultural growth processes are not sufficiently recognised and understood in dominant policy discourses. This is a particular problem with market failures for goods and services with private good characteristics and we need a greater emphasis on and understanding of the causes and nature of coordination failures which lead to these market failures. This paper examines core features of poor rural areas, the nature of coordination problems faced by different potential economic actors, the impacts of these problems on markets and economic development, and the ways that these have been addressed or ignored in different policies and policy approaches in Asia and Africa in the last 40 years. We conclude by drawing out the implications for policies seeking to promote pro-poor economic growth in poor rural areas today.

1 Introduction

In this paper we discuss the disappointing performance of agricultural adjustment policies in stimulating improved agricultural performance in sub Saharan Africa, especially in staple (semi-tradable) crops. We argue that this results from weaknesses in the neo-classical theory which underlie these polices and from associated failures to recognise structural changes (or transitions) in growing agricultural economies. After a brief description of agricultural policy changes in sub Saharan Africa we explain the mixed achievements of market liberalisation policies, using new institutional economic arguments regarding inherent difficulties in economic coordination in poor economies, difficulties which markets *per se* cannot overcome[2]. We conclude by considering the implications of these arguments for adjustment policies in different economies.

The core of our argument is that where markets are not functioning (due to economic coordination and other problems inherent in very poor rural economies) then market-based development processes cannot be relied on to drive development. Under such circumstances policies should initially promote the development of non-market based mechanisms for economic coordination, but do this in a way that eases the subsequent

---

[1] This paper draws heavily on Kydd and Dorward, 2003 and builds on ongoing work involving Colin Poulton and Jamie Morrison.

[2] We define such economic coordination for the moment as coordination of individual economic agents' investments in complementary activities which are necessary for these investments to yield satisfactory returns – an example of such complementary investments might be farmers' investments in more intensive crop production and crop buyers' investments in higher volume and more extensive crop purchase, processing and trading systems

difficult task of both stimulating and managing a process of transition from reliance on non-market to market- based mechanisms. This task must be accomplished at the same time as other transitions are stimulated and managed: from food deficit to (often localised) food surplus, from emphasis on production of staple food crops to production of other (higher value and diversified) agricultural products, and from an economy dominated by the agricultural sector and by farm incomes to a more diversified economy with a small, declining agricultural income share.

2 The agricultural adjustment story

Dominant (agricultural) development policy in SSA (sub Saharan Africa) over the last forty years or so can be (simplistically) divided into two broad phases: state- and market- led development[3] (with most countries experiencing an extended period of adjustment between). These two policy phases reflect changes in dominant economic policy paradigms, the first phase emphasising problems of market failure in poor economies (and promoting state interventions to address these market failures), the second phase emphasising state failures when intervening in markets, and promoting reliance on the private sector and markets with state withdrawal from market interventions. Continuing difficulties with agricultural growth in liberalising economies in Africa have led more recently to increasing recognition of another sphere of state failure, in supporting the conditions necessary for markets to work. We argue below, however, that difficulties in getting markets to work in poor rural areas are not just the result of state failures in enforcing property rights and in delivering infrastructure: poor rural areas face inherent market failures in economic coordination.

In the immediate pre and post- independence period SSA governments and international development agencies needed to act, and to be seen to act, to promote agricultural and rural development. The private sector was weak (in organisational capacity and in access to capital and human resources) and private investments in rural areas were generally risky and unattractive, partly because simultaneous investments were needed in communications infrastructure, in input and output trading, in research and extension, and in farmers' input purchases and production. State intervention, however, could coordinate smallholder farm activities with state controlled trading, infrastructural, research and extension investments and through such coordination both reduce systemic investment risks and take them over from the private sector. It could also access public finance sources and invest in organisational and human resource development. State activism also matched a common mistrust of private companies (with their colonial associations and tendency to be dominated by ethnic minorities), socialist suspicions of the private sector and of markets, confidence in the ability of the state, and dominant economic development theories stressing the importance of industrial sector development (and the taxation of agriculture to finance this). State activism was also a convenient tool for extending personal, party and state power and patronage into rural communities.

As a result the state took a dominant role in actively intervening in, and taking over, strategic economic activities and many SSA countries set up or continued with and extended the activities of monopolistic marketing parastatals[4]. By the early 1970s parastatals were a dominant part of the agricultural sector in most SSA countries, engaged in input supplies, seasonal credit disbursement (and sometimes recovery), and crop purchases. In some countries a single parastatal might have responsibility for a range of food and export crops, together with input sales. In other countries different parastatals had specific responsibilities for particular crop sub-sectors or for particular marketing activities. They were often supported by donor funds and monopolistic / monopsonistic regulations, and promoted pan-territorial pricing, and were sometimes linked in with integrated rural development programmes.

The weaknesses of parastatals, however, became more and more evident, and during the early 1980s donor support waned and turned to hostility, with growing recognition of major problems with the whole state led

---

[3] These two phases of dominant development thinking, about the role and nature of the state and markets in development, of course interact with other progressions – concerning the goals of development, the relative importance of different sectors, the nature of growth needed for development, etc.

[4] Marketing boards and parastatals were also established by colonial authorities. There were a variety of reasons for this, some overlapping with but others distinct from independent governments' later reasons for supporting these institutions.

development approach[5]. Fundamental problems with parastatals included the absence of clear (profit driven) disciplines promoting efficiency, susceptibility to political interference for short term political and private gain, corruption, and lack of technical and marketing innovation. Wider economic or system problems resulted from parastatals' growing fiscal demands and from price distortions stifling farmers' and others' incentives to make wider economically (rather than financially) optimal investments.

Policy analysts' and donors' response to this was based largely on neo-classical theory, narrowly defined here as theory that "postulate(s) maximising behaviour plus interactions through a complete set of perfectly competitive markets" (Hoff 2000**,** p2). State functions were limited to provision of non-excludable and non-subtractable 'public goods' - in agriculture commonly considered to include research into pro-poor technologies; dissemination of information about these technologies and about markets; market regulation; and provision of physical infrastructure (such as roads & telecommunications). Physical infrastructure is also, of course important for wider economic development, as is the provision of a generally stable and favourable macro-economic environment. Actions were therefore taken to privatise or dismantle agricultural marketing parastatals (generally de-linking credit, input and output markets), deregulate these markets, and eliminate credit, input and output subsidies. With time increasing emphasis was given to "social action funds" to assist poor short-term losers from the stabilization and liberalization processes and, more recently, to development of institutions supporting markets[6] (see for example recent World Development Reports).

3 Empirical challenges to agricultural adjustment and liberalisation orthodoxy

Agricultural adjustment and market liberalisation have not, however, been generally successful in 'getting agriculture moving' in liberalising countries. Agricultural sector performance over different regions in different parts of the world from 1960 are summarised in Table 1. For low income countries (excluding China and India) agricultural growth has been fairly constant from the 1960s to late 1990s, marginally positive in per capita terms. However, although (predominantly low income) countries in sub Saharan Africa achieved slightly higher rates of growth in the second half of this period, growth was still negative in per capita terms and was achieved largely by extensification in cereal production (with falling rates of fertiliser use). Although the data on which these estimates are based can be criticised (for example Wiggins 1995, Block 1995), the general picture of low or negative per capita growth in agriculture in much of Sub Saharan Africa over the last 30 years is widely accepted and supported by the increasing incidence and severity of rural poverty in Sub Saharan Africa as compared with other regions.

While few would argue that the pre-liberalisation situation could or should have been sustained (in many cases parastatals became hugely expensive while increasingly failing to deliver any service benefits), liberalisation has not delivered the substantial agricultural growth which is needed to drive rural poverty reduction and increased food security. Despite some benefits (such as reduced food prices for processed staples for poor consumers in southern Africa - see Jayne and Jones 1997 - and positive impacts in the supply chains for some cash crops in some countries - see Poulton *et al.* forthcoming for a discussion of cotton, for example) there has been a notable lack of success in developing input, output and financial markets offering attractively priced, timely and reliable services that are critical for more intensive crop, and particularly cereal, intensification.

Three principal explanations are given for this lack of success. The *partial liberalisation* view argues that lack of thorough liberalisation is the principal problem, with piecemeal liberalisation and frequent policy reversals (or fears of policy reversals) depressing returns and increasing risks to private sector investment (see for example Kherallah *et al.* 2000 and Jayne *et al.* 2002). Alternatively (or additionally) the *weak institutions* view explains slow market development in terms of weak institutional support to market and private sector development (for example [World Bank 2002, 2003) with cultural, political and legal factors undermining clear property rights and hence private investment incentives. Here the liberalisation agenda that tried to escape the problem of state failure in market interventions has run up against different problems of serious state failure, now in delivering public goods, the institutions and infrastructure needed for

[5] The Berg report (World Bank 1981), for example, marked a watershed in the development of the Washington consensus on economic policies in Africa.

[6] We discuss later this response to state failures in supporting conditions needed for markets to work.

privatised competitive markets to operate in the challenging conditions where poverty is most intractable. these views are essentially supportive of the liberalisation agenda and are consistent with its basic neo-classical tenets, although (particularly in the latter case) recognising the importance of state support for institutional public goods necessary for markets to work[7]. The third explanation for liberalisation's lack of success is more critical of its basic agenda. It is this *coordination failure* explanation that we consider in this paper. We argue that where dramatic poverty reducing agricultural growth in poor rural economies has been achieved outside SSA it has not generally been in the context of liberalised markets, or liberalised market development. We then consider explanations for this (focussed around institutions, coordination failures and low level equilibrium traps) and the policy implications of these explanations.

Despite the dominance of adjustment ideology in recent years, there is little empirical evidence of the benefits of liberalised market development in stimulating poverty reducing growth in poor rural economies. Indeed, Dorward *et al.*, forthcoming observe that the green revolutions which led to widespread and rapid pro-poor growth in poor rural areas in the 20th century depended on large scale and pervasive state interventions in establishing and operating institutional arrangements for input finance and supply and for farm gate price stabilisation and support, and in input and farm finance subsidies (in addition to investments in infrastructure, research and extension). Dorward *et al.* observe the establishment of successful green revolutions in three phases (see figure 1). Conditions for more intensive cereal technologies are established through basic investments in the first phase. A small number of farmers with access to seasonal finance and markets may then take up these technologies, but different government interventions are then required (in the second phase) to enable wider farmer access to seasonal finance and seasonal input and output markets at low cost and low risk. This provides a 'kick start' for a broad based agricultural transformation. Transaction costs per unit then fall as traded volumes (of credit and savings, inputs and produce) rise, with growing volumes of non-farm activity arising from growth linkages. The state can then withdraw, progressively liberalising agricultural markets.

This process faces many difficulties in managing interventions and transitions effectively and efficiently, as demonstrated by the parastatal experience in sub Saharan Africa. Political pressures also tend to maintain market interventions and subsidies when they are no longer necessary (and are indeed harmful).

Lack of attention to these issues by economists and policy analysts, together with data and methodological difficulties, has limited empirical study of the hypothesis set out in figure 1, but the hypothesis is compatible with Adelman and Morris' empirically based framework of factors determining economic development (Adelman and Morris 1997; Gaur 1997). Fann *et al.* 2003 test the hypothesis in India over the period 1960 to 2000. Early investments (in the 1960s and 70s) in credit subsidies, in roads, in fertiliser subsidies, in agricultural research on HYVs, and in power subsidies have high agricultural growth and poverty reduction payoffs (in order of descending poverty reduction returns). Returns to these investments decline markedly over the two following decades, with the exception of roads, which give consistently high (indeed the highest returns) in the later decades, when returns to educational investments (which are low in the earlier periods) rise (see table 2).

4 Theoretical challenges to agricultural liberalisation orthodoxy

Empirical evidence presented here therefore challenges the liberalisation/ adjustment orthodoxy: rapid and widespread pro-poor growth in poor rural areas has been associated with state intervention[8]. Why is this the case? We consider first systemic economic problems facing poor rural areas. This highlights the importance of coordination problems in these areas, and of institutional insights into these problems.

---

[7] Common support for farmer groups and for micro-finance as practically effective institutional arrangements for overcoming financial and other market failures are not, however, so consistent with the basic tents of market liberalisation and its neo-classical foundations. Advocacy for these non-market mechanisms for economic exchange and coordination. begs more general questions about the role of such arrangements in economic development in poor economies.

[8] There is, of course, evidence of dramatic state failure – but while we know that interventionist policies can make a substantial positive impact, evidence of success with market liberalisation policies is more limited.

Poor rural areas commonly face a set of generic problems including poor roads and telecommunications; poor human health; an undeveloped monetary economy with a narrow base; thin markets (for agricultural inputs, outputs and finance); poor information (particularly in agriculture, on prices, on new technologies, and on potential contracting partners), difficulties in enforcing impersonal contracts, high risks (discussed in more detail below); and high transactions costs. We focus here on transaction costs incurred when actors protect themselves against the risk of transaction failure (in searching for and screening potential contracting partners and their goods or services, in negotiating and contracting, and in monitoring and enforcing contracts)[9].

Recognition of the riskiness in agriculture in poor rural areas (for example Chambers 1983), has tended to focus on vulnerability to natural (weather, pests, sickness) and market (price) shocks. Transaction failure, however, poses a further major 'systemic investment risk' in poor rural areas (Dorward and Kydd 2002) and these three risk categories together lower productivity by (a) directly lowering average returns to investment, (b) discouraging investments, and (c) distorting investments towards those that reduce risks under adverse conditions and away from those that maximise expected returns.

Transaction risks, however, are particularly damaging, as they directly undermine exchange and specialisation. Dorward and Kydd 2002 identify two major transaction risks as (a) coordination risks and (b) risks of opportunism. We define coordination as "a process in which players within a supply chain are encouraged to take common or complementary actions necessary to achieve individual goals" (adapted from Poulton, Gibbon *et al.* 2003). Economic coordination failure can then be defined in terms of its direct effects on individual investors, as "the failure to make an investment due to a possible absence of complementary investments by other players at different stages in the supply chain" (modified from Dorward and Kydd 2002). Coordination risks are then the risk of investment failure due to a lack complementary investments by other players in a supply chain. Risks of opportunism, on the other hand, arise where another player with complementary investments (a) has an effective monopoly over a critical service and can capture an undue share of the revenue in the supply chain, or (b) can deliver sub-standard goods or services whose quality cannot be easily assessed when entering a contract. Examples of opportunism include loan default by farmers; low produce prices offered by traders at harvest time (when farmers are desperate for cash) or in remote areas (where farmers have no other sales outlets); sale of poor quality or adulterated inputs; and use of inaccurate/ loaded weights and measures. Coordination failure can arise even in a basically profitable supply chain as a result of coordination risks and risks of opportunism, and will then be an equilibrium "worse than some alternative state of affairs that is also an equilibrium" Hoff 2000. Coordination failure can constrain agricultural intensification by depressing investments by mutually dependent investors: input suppliers (who need to invest in input supply systems and stock); financiers (who need to invest in farmers and traders); farmers (who need to invest in input purchases and labour); and traders (who need to invest in crop marketing systems, transport and purchases). This low level equilibrium, with a set of mutually self sustaining generic problems in a vicious cycle of under-development, is illustrated in figure 2. Weak institutions (for coordination or contract enforcement), coordination failures, depressed investments, and thin markets are at the heart of this.

The low level equilibrium concept is not, of course, new. Rosenstein-Rodan 1943 argued that markets at the early stages of development may not coordinate activities needed for development, due to spillovers or externalities between different sectors (for example in infrastructural development, skills and knowledge development, or falling costs of intermediate products), such that investment in each single sector may not be profitable when investment in all of them is. Hoff 2000 describes more modern and robust models of the persistence of low level equilibria despite positive individual changes such as "good mutations" of existing institutions, technological "silver bullets" or improved resource prices. Persistence occurs where spillovers

[9] Transaction costs are difficult to define. We recognise three different functions of transaction costs: costs incurred in to protect oneself against risks of transaction failure (the focus of this paper); costs incurred to protect a contracting counter-party against transaction failure, to induce them to enter a contract; and costs incurred in meeting licensing or other requirements of bureaucratic and rent seeking government agencies and officials. Reducing this last type of transaction cost is (rightly) an important focus of market liberalisation policies, but it is unfortunate when these different types of transaction cost are not distinguished from each other. Our definition of transaction costs allows a clear distinction of transaction costs from transformation costs, the costs of making or growing things or physically providing services, including processing and transport services.

are widespread and diffuse, preventing a "Coasian" solution through negotiation and institutional innovation by private agents. These models, together with different strands of new institutional economics theory, provide valuable insights into both the existence of low level equilibrium traps and the potential for and difficulties in escaping to more favourable equilibria or growth paths.

North, in one strand of NIE, has examined the political economy processes of institutional change (Davis and North 1971; North and Weingast 1989; North 1990; North 1995) as an evolutionary process of self interested powerful groups modifying institutions in response to changes perceptions of prices, technologies and transaction costs. He observes that similar changes may stimulate very different types of institutional change in different situations as initial conditions determine the perceptions and relative power of different groups. Hoff 2000 uses the term 'ecological economics' to describe the way that agents' opportunities and behaviour (and hence wider economic development) is determined as much by the nature and structure of interaction between agents as by the fundamental properties of the system (its natural endowments).

Williamson (Williamson 1985, 1991; Williamson 1994) uses a more micro-economic analysis of the way that agents structure their institutional arrangements in the context of their institutional environment. This then influences choices between firms, markets and relational contracts (or hierarchical, market and hybrid contractual forms) for exchange and coordination. Key insights are the influences on contractual form and transaction failure of asset specificity[10], risk exposure, frequency of contracts, the nature of goods and services exchanged, the institutional environment, and human propensity for opportunism (see also Jaffee and Morton 1995; Dorward 2001). Widespread relevance of this analysis to poor rural areas becomes apparent when it is recognised that asset specificity is the result of thin markets (Dorward and Kydd 2002). This underlies the core problems of coordination risk and risk of opportunism, as where the returns to an investment are dependent upon complementary action in a very thin market, any investment is subject to the risk of coordination failure or of opportunism.

Williamson's conclusion for developed economies (that "non-standard contractual forms" often provide the best solutions) thus poses a major challenge to the market liberalisation paradigm in poor rural economies where thin markets are pervasive: it calls for much more nuanced perspectives on, for example, interlocked markets, sharecropping, and local (private and state) monopolies as these may be the most efficient contractual forms, and in many circumstances may be the only contractual forms which lower transactions costs and risks sufficiently to make transactions worthwhile and thereby prevent supply chain failure. Policy attention then has to be focused on ways of permitting, even promoting, non-standard and sometimes monopolistic contractual forms while at the same time promoting efficient and equitable pro-development institutional change. These policy implications are nuanced because they are critical of more simplistic neoclassical economics perceptions of the universal benefits of markets and competition but are nevertheless fundamentally in favour of the private sector and of competitive processes.

Another perspective on coordination is found in the examination by Hall and Soskice 2001 of 'varieties of capitalism' in OECD economies. They propose two "types" of national economy, at poles of a spectrum: Liberal Market Economies or LMEs (where activities are coordinated via intra-firm hierarchies, competitive market arrangements and vertical hybrid arrangements between firms in a supply chain) and Coordinated Market Economies or CMEs (with greater use of "non market relations to coordinate endeavours and to construct core competencies" with more extensive relational investment, more incomplete contracts, and more exchange of private information within networks). CMEs draw on a further set of organisations and institutions, supporting more horizontal or networked strategic interaction, both across and within supply chains.

Hall and Soskice find that the LME/CME distinction within the OECD is a distinction between the English speaking countries and the rest, and that LMEs tend to be specialised in activities characterised by radical innovation whereas CMEs tend to be specialised in activities requiring continuous technical innovation. There are clear theoretical arguments for this specialisation which are related to the need for coordinated strategic commitment for investment in specific assets. In CMEs this is achieved through various

---

[10] 'Specific assets' are assets with very limited, specific applications – so that once an investment has been made to support a particular activity or set of transactions investors have very strong motives to ensure that upstream and downstream activities and transactions are in place.

deliberative mechanisms that bring together the different actors and promote institutions for promoting and enforcing coordinated action and shared understandings of goals and distributive outcomes of such action. Governments may facilitate these deliberative and coordination processes and also strategies which emerge from these processes, and actively promote particular coordination strategies. However, strong state action can also be problematic because of imperfect information, goal displacement, and firms' wariness of governments unilaterally changing the rules of the game.

Again this analysis is highly relevant to poor country smallholder agriculture facing serious background weaknesses in the institutional environment, a need for continuous technical innovation, and serious coordination failures, suggesting the need for a CME rather than LME type approach. It is also pertinent to note that historically LMEs have tended to be pioneers in specific sectors, but 'followers' have used state coordination to catch-up (and often overtake) these pioneers. State coordination is not, however, a panacea, and the analysis poses serious questions about appropriate roles for the state in promoting coordination.

Finally, we turn to consider more formal models of low level equilibrium traps and coordination failure. Building on Hoff's summary of work on 'underdevelopment traps' (Hoff 2000) we develop a simple model of coordination failure to (a) formally demonstrate simple mechanisms by which coordination failure may lead to under development traps and (b) highlight key variables affecting the movement of a poor rural economy to low or high level equilibria.

In figure 3 we describe some aspects of the coordination problem of poor rural areas by adapting a structure used by de Meza and Gould 1992 to demonstrate the existence of two equilibria in property rights enforcement. We examine the relationship between individual actors' costs and returns (on the vertical axis) and the volume of aggregate investments in a supply chain – for example in crop input delivery systems, seasonal farm finance, farm input purchases, and produce trading systems and purchases. All actors face a two stage investment problem, in which they must make stage 1 investments in assets specific to a particular supply chain activity in order to reap net revenues in stage 2. Their revenues in stage 2, however, are determined not only by the scale of their own stage 1 investments, but also by the scale of others' stage 1 investments (investments which are not known to them when they make stage 1 investments). This results from potential coordination failure (limited stage 1 investment by others may lead to insufficient supply or demand of complementary products or services to utilise the capacity generated by the actor's stage 1 investments) and from potential opportunism by other agents in a thin market.

Figure 3 separates out the risks of loss due to coordination failure and opportunism from expected net revenues without coordination failure or opportunistic losses. We assume, critically for our argument, risks of coordination failure and opportunism which decline with increasing total investment in the supply chain. The result is a threshold level of total supply chain investment below which individual actors in that supply chain incur losses and above which they reap profits. The total level of investment therefore has positive (or negative) spillovers, and positive (or negative) feedbacks above (or below) this threshold. Below the threshold no actors face positive incentives to invest, and hence the supply chain is caught in a low level equilibrium trap[11]. Above the threshold we may expect the dynamics of competition and technical and institutional innovation to further lower costs with time, with continuing increases in investment.

Simplistic though this analysis may be in a number of ways, it helps us to consider two processes by which a set of actors may escape from the trap: coordination, and threshold shifting.

Coordination requires deliberative processes and strategic investment commitment discussed earlier in the context of CMEs: from the logic of Figure 3 it is clear that coordination will not be achieved by market mechanisms alone. We classify non-market coordination mechanisms in terms of 'local' and 'extensive' coordination. Endogenous 'local' coordination mechanisms may develop either through vertical integration (effectively larger scale commercial farms) or through local relations linking different local agents interested in investing in different activities in the supply chain, for example through farmer groups or through interlocking arrangements by (generally powerful) traders. In staple crops, where total supply chain profits

[11] The precise shape of the curves drawn in figure 3 is largely conjectural (particularly at low levels of investment): the existence of a low level equilibrium trap is not sensitive to these shapes provided that with increasing total supply chain investment the expected net revenue curve is crossed from above by total coordination and transaction enforcement costs/risks.

are likely to be more limited than in cash crops, progress in local investment is likely to be slow (as low returns weaken both the incentives to set up coordinating institutions and the penalties for defection). Eventually, however, if there is sufficient growth in local coordination mechanisms then these may in aggregate reach the threshold level of total investment in the supply chain, enabling a transition into a market based growth path. Left to itself this process is, however, likely to be slow and fragile, highly path dependent and susceptible to political economy processes of rent seeking (discussed earlier) and to shocks affecting the total investment threshold.

Alternatives to slow and fragile endogenous local coordination processes are (a) externally assisted 'soft' coordination processes (for example involving state or NGO support for the development of farmer organisations, for trader associations, or for contract grower, nucleus/ outgrower and other interlocking systems) or (b) more extensive 'hard' coordination where a strong central coordinating body with a mandate from the state ensures investments across the supply chain with highly credible coordinated commitments[12]. The African parastatal bodies discussed earlier attempted to follow this approach by taking over investments and investment risks for all parts of the supply chain except production, with the use of government and party regulations attempting to provide protection from both opportunism and some elements of market risk. This is not the only model for pursuing 'extensive coordination' but, as discussed earlier, it highlights both the difficulties facing the development of extensive coordination and its record of some dramatic success.

The development of coordination mechanisms through endogenous local and through different types of external support will all be easier with a lower total supply chain investment threshold, and a low threshold will also ease the transition from non-market to market coordination. Figure 3 suggests that the threshold can be shifted to the left in three ways: by lowering coordination costs and risks, by lowering transaction enforcement costs and opportunism risks, and by raising expected returns net of transformation costs and risks. Each of these elements can be considered separately, and this suggests a valid agenda for technical and institutional change that lowers costs (particularly stage 1 costs), improves prices, promotes insurance and protects the different players against opportunistic behaviour by others.

Different coordination processes can also be examined in terms of the relationships between the development of the institutional environment supporting impersonal contractual arrangements and technological development, which generally requires coordination between different links in increasingly complex supply chains including input suppliers, financiers, producers and output purchasers and processors. Figure 4 (from Dorward *et al.* 2003) provides a simple and highly stylised representation of this. Economic development is shown as a movement from the south west to the north east, with complementary progress in institutional and technological development: isocost and isoquant curves represent the costs and benefits in achieving different combinations of technical and institutional development. Poorly developed institutions cannot support the coordination required for highly advanced technologies, and therefore the south east of the diagram encounters market failure. In the north west corner, however, high levels of institutional development should allow effective competitive markets to support the coordination required for relatively simple technologies. Along the south west to north east diagonal there is more ambiguity: institutional development may be insufficient for competitive markets to provide the coordination necessary for particular technologies' supply chains, but the coordination processes discussed earlier may be able to achieve this. We can use this analysis to examine different growth paths and processes for an economy, community or industry to move in a north easterly direction. While in any situation the 'optimal path' depends upon the shapes of the isoquant and isocost curves, there is no *a priori* reason for expecting it to be restricted to situations with 'all markets effective': a more natural expectation would be for the path to move across the middle of the diagram, as drawn with a mix of effective and ineffective competitive markets with non-market institutional arrangements. Endogenous local coordination would then involve small incremental movements in a north easterly direction, while more extensive 'hard' coordination, where successful, would allow more significants shift in a more east-north-east direction. Externally assisted 'soft' coordination processes would fall somewhere between these two extremes. Dorward *et al.* 2003 discuss in more detail the relative merits of and influences on different growth paths, but we note here the intuitive attractiveness of CME rather than LME routes, the latter involving movement in a much more northerly direction.

---

[12] This distinction between 'soft' and 'hard' promotion of coordination reflects observations by Hall and Soskice 2001 of differences between CMEs in types of state support.

We conclude our discussion of theoretical challenges to agricultural liberalisation orthodoxy by pulling together some key points. First, perfectly competitive markets of the neo-classical theory underlying liberalisation policies do not ignore coordination problems, coordination is achieved efficiently and effectively by markets. However they depend upon the products, processes and actors having certain (restrictive) characteristics and operating in the context of highly sophisticated institutions with adequate regulation & standards and effective state provision of public goods. They also depend upon competitive thick markets. Poor rural areas without these thick markets (and without many of the institutions, regulations, and technical and socio-economic characteristics required for efficient markets) then face a 'catch 22' situation: where does coordination (needed to get the market working) come from when the market is not working?

We therefore put forward arguments that non-market arrangements are necessary to provide the coordination necessary to induce private agents to invest in specific assets for different activities in a supply chain. In addition to the very practical difficulties faced in achieving this non-market coordination, however, there is an underlying theoretical (and also very practical) difficulty and 'catch 22' with inherent contradictions in the transition from a non-market to a market coordination system: effective non-market coordination generally requires a limited number of strong coordinating players at some point in the supply chain (to allow personal coordination mechanisms to work), but market coordination requires a much larger number of players at all points in the supply chain to allow impersonal competitive forces to operate. How can one move from one coordination system to another without destroying the confidence in thick markets which must be the foundation of market coordination? Solutions to this problem are likely to involve movements from 'hard' external and extensive coordination mechanisms to softer forms of external coordination assistance as part of an evolutionary transition process.

5 Policy Implications

We consider the policy implications of the coordination arguments made above first by making some more general observations about policy processes and context, and then by making more specific suggestions for moving policy forward.

A key 'broad' policy message from this analysis is that we need a policy framework that recognises the importance of stages of development and of endogenous 'political economy' processes in institutional change. These 'stages of development', as illustrated in figure 2, demand different types of policy and institutional development at different stages (Adelman and Morris 1997): thus while India seriously needs to liberalise and reduce agricultural support, current Indian debates (and advocated solutions) should not be carelessly "copied across" to most SSA smallholder agriculture. The endogenous dynamics of policy and institutional development at these different stages also need to be allowed for in policy analysis: it is not enough to argue, for example, that agricultural liberalisation policies have failed because governments have not 'let go' and implemented these policies thoroughly enough: policy analysis must recognise the legitimate concerns which prevent governments from completely 'letting go' of, for example, staple food markets.

If different stages of development need different policies, then governments need to stimulate and manage transitions between these policy stages. A number of different transitions are important here: the transition from non-market to market based coordination mechanisms, and its inherent discontinuities, have been discussed above. Associated with this are three other transitions: from a food deficit to a food surplus economy, from dominance of staple food crops to higher value and diversified agricultural production systems, and from an economy dominated by the agricultural sector and by farm incomes to a more diversified economy with a small, declining agricultural income share. Again, there are policy discontinuities in these transitions, with for example, shifting thresholds and changing relations between staple food prices and economic growth; changing rural/ urban and farm / non-farm relations, concerns and expectations; changes in the structure of the agricultural economy and in the structure of international trade; and changes in structural variables affecting food security policies. The shift from food deficit to food surplus can occur very rapidly and pose major and immediate challenges to development strategies, particularly if surplus production is located far from international ports. India, for example, has accumulated very large food stocks and maintains these with large fiscal costs, while the fiscal costs of surpluses in Zimbabwe in the early 1980s were unsustainable, so guaranteed process were withdrawn and its maize revolution regressed. Ethiopia's more recent success in stimulating maize production led to dramatic price

falls, large financial and welfare losses for surplus producers, and the collapse of the growth dynamics. Shocks or policies that upset harmonisation across these transitions and thresholds can set back not just the dynamics of ongoing transitions but also, by affecting actors' expectations of and confidence in development, can set back future development and transition processes.

Another broad policy message is that coordination mechanisms need to be given a much more prominent place in policy thinking. We suggest below particular institutional approaches by which coordination might be achieved, and conceptual 'filters' for examining these, but for these to be developed and implemented we need to pursue (through action research) an "institutionalist" and experiential approach to smallholder agricultural development (see also (Omamo 2003)), based on business models that convince private investors and focus on coordination and networks. This will often require commitment to public subsidies to the private sector for commercial service provision in rural areas. This, and other proposals that rub against neoclassical prejudices should not be automatically ruled out: non-standard contractual forms, regulated monopolies and a prominent coordinating role for the state (and others?) may all have their place, though they must also be rigorously designed and governed to overcome historical failures with these types of intervention.

What then should be the roles of governments in promoting economic coordination in poor rural areas? The theory of low level equilibria suggests that they should attempt to induce movement from the current low level equilibrium, movement that is sufficiently far reaching that the economy will reach new equilibrium. This can involve action on a number of fronts broadly conceived of as identification of 'critical missing links' causing coordination failure across a supply chain and of cost effective mechanisms for lowering risk and raising expected secure returns to a level that provides opportunities for productive investments that both promise and deliver returns sufficient to attract private agents to invest in these missing links.

These mechanisms may involve technical change to increase productivity or reduce productivity risks; price intervention to increase profitability or reduce market risks; and institutional change to reduce the private costs and risks of coordination failure and / or transaction enforcement failure. Examples of some of these mechanisms include investment in communications infrastructure, or support for (regulated) monopolies; franchises, trader and farmer associations to address coordination failures and risks from opportunism (but these generally face major governance challenges); grain reserves, price intervention and guarantees, market information systems, market infrastructure development, commodity exchanges and insurance systems to address vulnerability to shocks (although these face major problems of moral hazard & adverse selection); and price support, input/output/credit subsidies, communications infrastructure, technical research and extension, and support for trader and farmer associations to increase basic supply chain profitability.

Classical underdevelopment equilibrium theory proposed a "big push" with a leading role for the state on many fronts. The more recent literature is (rightly) more wary of government led co-ordination (although as argued earlier large scale coordination has, on some occasions but not others in the 20th century, achieved rapid widespread growth). Failures in achieving sustained success with state led approaches include not only rent-seeking, but also a lack of inventiveness, with "*premature greying*" in Sachs' terminology. Where a 'big push' strategy is to be followed, then the timing of this and the design of time limits and exit and market transition strategies are critical. These have to be linked in with more general questions about ways in which trade and domestic policies support appropriate institutions.

Governments, however, while having an overall responsibility for encouraging coordination as a public good are not the only agents who can promote it: producer, processor and trader associations and NGOs all have interests and potential complementary roles. Whatever the agency by which coordination is promoted, however, the theory discussed earlier suggests useful conceptual 'filters' for examining specific proposals. Thus proposals should address missing markets in the short term while laying the basis for longer term market development and reducing transactions costs and risks for key players in supply chains. They also need to address constraints on a sufficiently broad front, not relying on too much on 'silver bullet' technologies or individual business / institutional innovations without complementary improvements in institutions and mechanisms for coordination, as single interventions may not be able to break out of a low-level equilibrium. The timing of proposed interventions is also critical, as they must build on and into existing opportunities and be sufficiently large scale and stable over long enough periods to change perceptions. However they also need to be flexible in response to changing exogenous conditions (for example weather or international markets) and must stimulate and manage the transitions discussed above.

They must also be secure against rent seeking and should not remain in position long enough to be subverted by premature greying. The planned complementary roles of government and of other players, is critical in this, with clear objectives, roles and mechanisms for intra-sectoral non-market coordination and price formation, but there must also be clear exit and transition pathways.

6 Conclusions

Economic coordination failures in poor rural areas in Africa have been largely ignored in policy analysis over the last 20 years, but they are crucial to our understanding of the implementation and impacts of agricultural adjustment policies. With further agricultural adjustment policies in prospect, in both OECD and developing countries, much more attention is needed on understanding the nature of coordination failures, their effects, and opportunities for overcoming them. Hoff 2000 suggests that new understanding of coordination failures means that 'development may be both easier and harder than (analysts) previously thought'[13]. This is because the existence of thresholds means that (in theory) once a threshold is crossed, further growth and development is a self-sustaining process, reducing the resources needed for significant development impacts. However, it is very difficult (a) to understand the binding constraints causing coordination failure in a supply chain, (b) to design and implement mechanisms for overcoming these constraints, and then (c) to manage the multiple transitions required to maintain a (more or less) stable growth path. Furthermore, not only can ill judged interventions make matters worse, but the challenges to the development of local coordination mechanisms may be greater now (in an increasingly global economy) than they were in the past (Dorward *et al.* forthcoming). Whatever the changing difficulties of development, a focus on overcoming coordination failures involves a different set of policy, analytical and research approaches from that of either current liberalised market approaches or earlier state led approaches. This is a major challenge to those working for agricultural development and significant poverty reduction in rural Africa where severe rural poverty is most entrenched.

References

Adelman, I. and Morris, C. T. (1997). "Editorial: Development History and its Implications for Development Theory." World Development 25(6): 831 - 840.

Block, S. A. (1995). "The recovery of agricultural productivity in sub-Saharan Africa." Food Policy 20(5): 385-405.

Chambers, R. (1983). Rural Development: Putting the Last First, Longmans.

Davis, L. E. and North, D. C. (1971). Institutional Change and American Economic Growth. Cambridge., Cambridge University Press.

de Meza, D. and Gould, J. (1992). "The social efficiency of private decisions to enforce property rights." Journal of Political Economy 100(3): 561-580.

Dorward, A. (2001). "The effects of transaction costs, power and risk on contractual arrangements: a conceptual framework for quantitative analysis." Journal of Agricultural Economics 52(2): 59-74.

Dorward, A. and Kydd, J. (2002). The Malawi 2002 Food Crisis: The Rural Development Challenge. Paper presented at 'Malawi after Banda: perspectives in a regional African context', a conference to mark the retirement of John McCracken, 4-5th September, Centre of Commonwealth Studies, University of Stirling.

Dorward, A. R., Kydd, J., Morrison, J. A. and Poulton, C. (2003). Institutions for Markets' or Markets as Institutions: Theory, Praxis and Policy in Institutional Development. Working paper. Wye, Ashford, Centre for Development and Poverty Reduction, Imperial College Wye.

Dorward, A. R., Kydd, J. G., Morrison, J. A. and Urey, I. (forthcoming). A Policy Agenda for Pro-Poor Agricultural Growth. World Development

Fann, S., Thorat, S. and Rao, N. (2003). Investment, Subsidies, and Pro-poor Growth in Rural India Draft report, Institutions and Economic Policies for Pro-Poor Agricultural Growth, IFPRI.

Gaur, S. (1997). "Adelman and Morris Factor Analysis of Developing Countries." Journal of Policy Modeling 19(4): 407-415.

Hall, P. A. and Soskice, D., Eds. (2001). Varieties of capitalism: The institutional foundations of comparative advantage. Oxford, Oxford University Press.

[13] This observation begs some interesting questions about the relationships between development analysts and the practical administrators who designed and implemented successful coordination models in the past.

Hoff, K. (2000). Beyond Rosenstein-Rodan: The Modern Theory of Underdevelopment Traps. World Bank Economic Conference 2000.

Jaffee, S. and Morton, J., Eds. (1995). Marketing Africa's High Value Foods, Kendall Hunt.

Jayne, T. S., Govereh, J., Mwanaumo, A., Chapoto, A. and Nyoro, J. K. (2002). "False Promise of False Premise? The experience of food and input market reform in Eastern and Southern Africa." World Development.

Jayne, T. S. and Jones, S. (1997). "Food marketing and pricing policy in Eastern and Southern Africa: A survey." World Development 25(9): 1505-1527.

Kherallah, M., Delgado , C., Gabre-Madhin, E., Minot, N. and Johnson, M. (2000). The road half-travelled: agricultural market reform in sub-Saharan Africa. Food Policy Report. Washington D C, International Food Policy Research Institute.

Kydd, J. and Dorward, A. (2003). Implications of market and coordination failures for rural development in least developed countries. Paper presented at the Development Studies Association Annual Conference, Strathclyde University, Glasgow, 10-12 September 2003.

North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge, Cambridge University Press.

North, D. C. (1995). The new institutional economics and third world development. The New Institutional Economics and Third World Development. J. Harriss, Hunter, J. and C., L., Routledge.

North, D. C. and Weingast, B. W. (1989). "The evolution of institutions governing public choice in 17th century England." Journal of Economic History 49: 803-832.

Poulton, C., Gibbon, P., Hanyani-Mlambo, B., Kydd, J., Nylandset Larsen, M., Maro, W., Osario, A., Tschirley, D. and Zulu, B. (2003). Competition and coordination in liberalized African cotton market systems. Imperial College London, Department of Agricultural Sciences.

Rosenstein-Rodan, P. (1943). "Problems of industrialisation of Eastern and Southeastern Europe." Economic Journal 53(210-211): 202-211.

Wiggins, S. (1995). "Change in African farming systems between the mid-1970s and the mid-1980s." Journal of International Development 7(6): 807-848.

Williamson, J. (1994). The Political Economy of Reform. Washington DC., Institute for International Economics.

Williamson, O. E. (1985). The Economic Institutions of Capitalism. New York, The Free Press.

Williamson, O. E. (1991). "Comparative economic organisation: the analysis of discrete structural alternatives." Administrative Science Quarterly 36(269-296).

World Bank (1981). Accelerated development in sub Saharan Africa: an agenda for action. Washington D.C., World Bank.

World Bank (2000). World Development Indicators: tables and CD ROM (some data also gathered from earlier editions). Washington D.C., World Bank.

World Bank (2002). Institutions for markets: World Development Report 2001/2002. Washington D.C., World Bank.

World Bank (2003). Sustainable Development in a Dynamic World: Transforming Institutions, Growth, and Quality of Life. World Development Report, 2003. Washington D.C., World Bank.

Table 1 Agriculture Sector Performance by Country Income Level and Region

	AGRICULTURAL GROWTH			POPULATION GROWTH	TOTAL CROP LAND	IRRIGATED LAND	FERTILISER USE		CEREAL PRODUCTION			OTHER CROPS
	(average annual % value added)			(average annual %)	Area per capita	ha	total kg	kg/ha	Area (ha)	Yield (kg/ha)	Yield share in prod'n increase	Area (ha)
	1965-98	1980-90	1990-98	1965-98	% change 1979/81 to 1995/97 or 1996/98							
World	2.3	2.7	1.7	1.7	0%	14%	18%	12%	20%	26%	56%	-5%
Low Income Countries	3.3	4.1	3.7	2.1	-17%	29%	130%	114%	14%	15%	52%	8%
Low Inc. exc. China & India	2.8	3.0	2.7	2.5	-22%	40%	133%	109%	50%	17%	25%	-11%
Middle Income Countries	2.3	2.7	0.8	1.7	46%	6%	-14%	-30%	69%	32%	32%	-3%
High Income Countries	..	..	0.8	0.7	-11%	12%	-6%	-3%	-10%	28%	100%	2%
Low & Middle Income Countries												
East Asia & Pacific	3.6	4.4	3.5	1.8	0%	25%	141%	100%	3%	29%	91%	109%
Latin America and Caribbean	2.6	2.1	2.2	2.1	-16%	35%	46%	26%	-1%	33%	100%	25%
Middle East and North Africa	4.2	5.5	2.5	2.8	-28%	69%	85%	57%	13%	53%	80%	32%
South Asia	2.9	3.2	3.7	2.2	-30%	40%	157%	157%	-1%	39%	100%	5%
Sub Saharan Africa	1.9	2.5	2.4	2.7	-22%	26%	-2%	-18%	71%	28%	28%	-5%

Source:World Bank 2000; FAO statistics

Table 2 Agricultural Growth and Poverty Reduction Impacts of Indian Government Investments

	Returns in Agricultural GDP (Rps per Rps Spending)				Number of poor reduced per Million Rps spending				Cost per poor person lifted above the poverty line (current UK£)			
	1960s	1970s	1980s	1990s	1960s	1970s	1980s	1990s	1960s	1970s	1980s	1990s
Roads	3.07	3.48	2.92	4.29	229.42	722.44	517.02	473.9	58	18	26	28
Education	1.20	1.49	0.95	1.26	14.37	129.65	167.52	154.45	928	103	80	86
Irrigation Investment	0.51	1.06	1.02	0.07	41.63	125.01	115.86	6.33	320	107	115	2,106
Irrigation Subsidies	0.69	1.20	-1.18	0.24	56.71	142.49	n.a.	24.32	235	94	n.a.	548
Fertiliser Subsidies	n.a.	2.99	0.43	-0.45	n.a.	354.43	48.59	n.s	n.a.	38	274	n.s
Power Subsidies	2.26	1.29	0.30	0.07	184.11	152.85	33.72	7.22	72	87	395	1,847
Credit Subsidies	8.61	3.12	0.70	-0.33	702.43	369.43	79.54	n.s	19	36	168	n.s
HYV Agric. R&D	3.11	1.89	0.39	n.s.	253.9	223.51	44.34	n.s	53	60	301	n.s

Source: Fann, Thorat *et al.* 2003

Figure 1 Policy phases to support agricultural transformation in favoured areas [14]

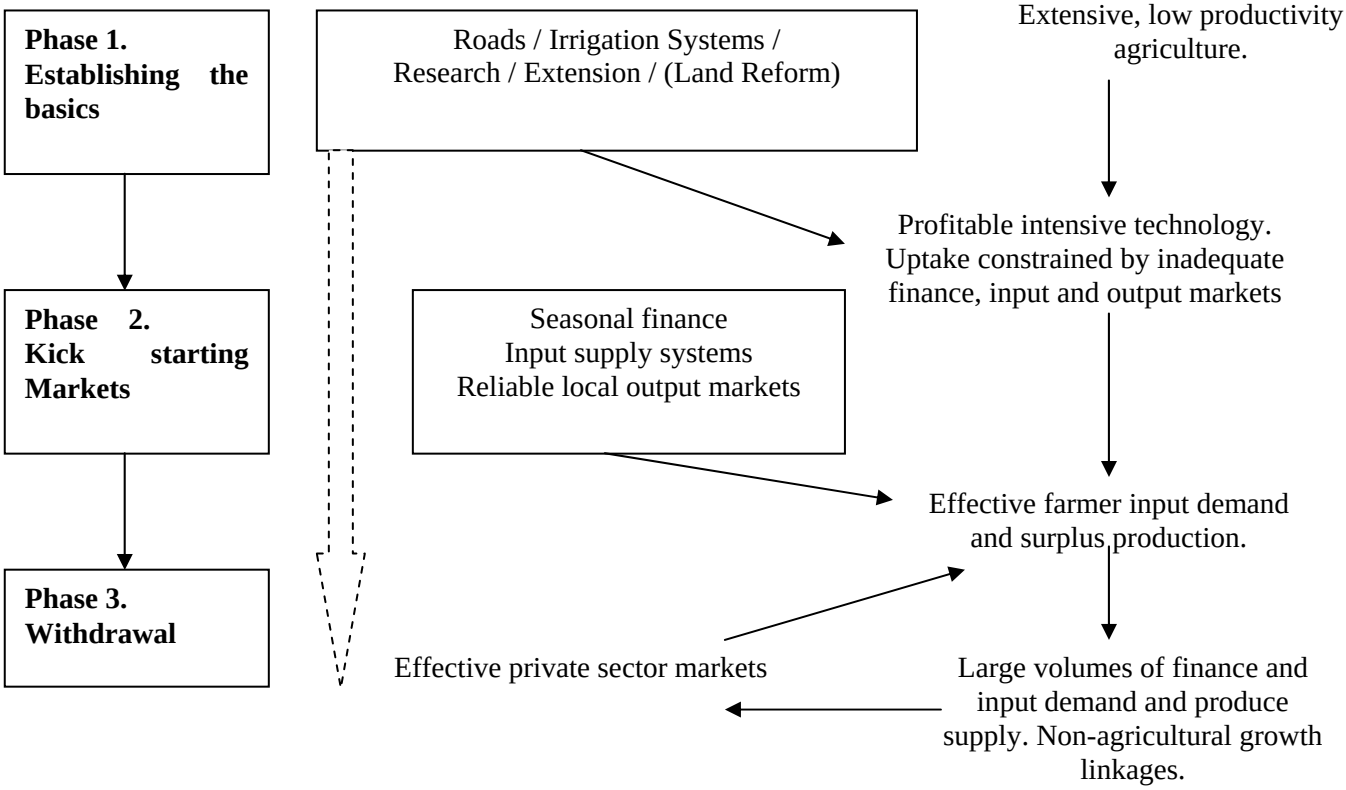
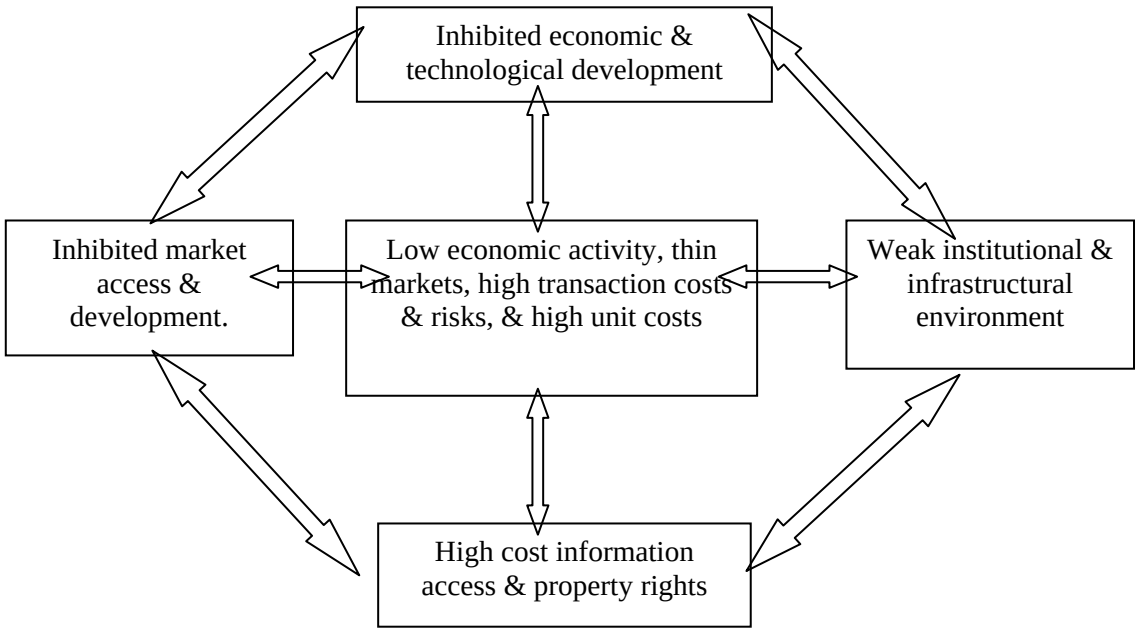


Figure 2 **Coordination Failure and the Low Level Equilibrium Trap**[15]



[14] From Dorward, Kydd *et al.* forthcoming

[15] From Dorward, Kydd *et al.* 2003

Figure 3 High and Low Level Equilibria with Coordination and Opportunism Risk

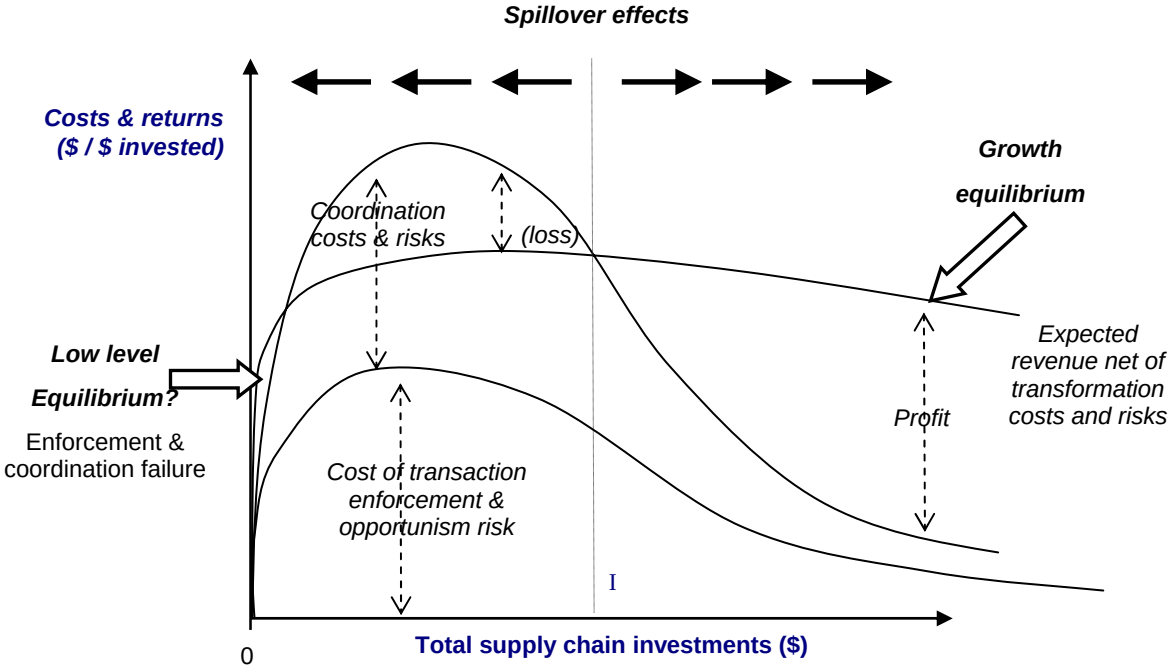
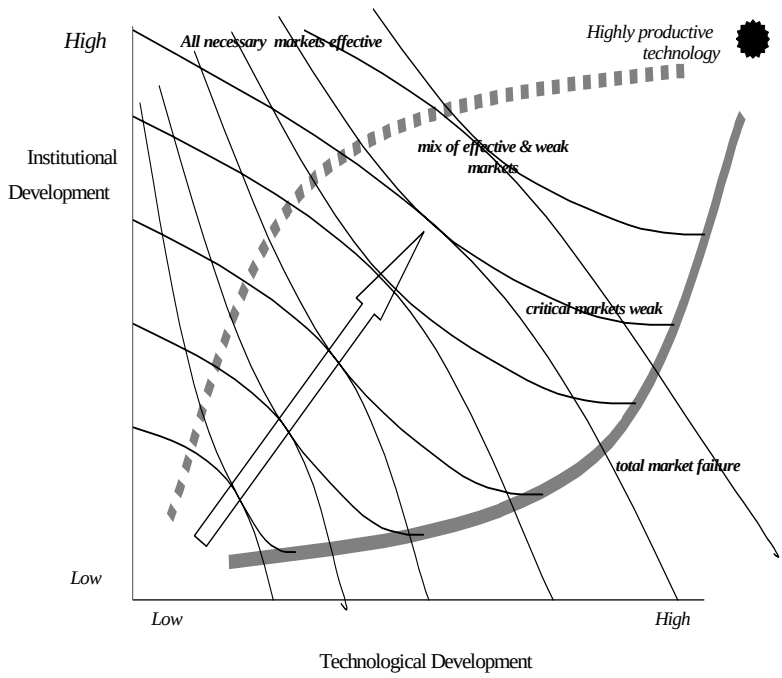


Figure 4. Mapping an Institutional and Technological Development Path [16]



[16] From Dorward *et al*. 2003