

9. THE INSTITUTION INTENSIVE SCENARIO

The institution intensive scenario is based upon the assumptions that endowments and resources suffer heavy damage and institutional infrastructure remains largely intact. For example, a plausible setting would be an urban location, perhaps a state capital, which depends on outside suppliers for food and many manufactured goods as well as raw materials for local production. The institutional infrastructure which interacted with market structures in the best case scenario is present in this scenario, however, many of the resources which were exchanged in the best case markets are lost or severely restricted. This loss of resources is assumed to extend to many of the physical resources that support intercity/interregional communications and transportation so that migration from the institution intensive setting is either very difficult or involves a high level of uncertainty. Thus, the city is faced with the oversight of its surviving population, given a viable institutional infrastructure that includes a banking system, a system for the recognition, protection and enforcement of property rights, a political system, and a legal system for the settlement of disputes.

This analysis of likely institution intensive market structures differs from prior work in two important respects. (In particular, see the 1987 survey by Hill.) First, although the adaptation and efficacy of institutions to the new resource constraints is a relevant consideration for our analysis, the underlying assumption that institutions have sustained only light damage should not be forgotten. Second, our analysis makes no attempt to argue about optimal responses of the extra-market institutions. The intent here is to delineate possible responses based on empirical and theoretical evidence and some understanding of the exchange problems that the institution intensive world will face. As was stated in chapter one of this report, the determination of appropriate policy actions is more closely linked with the criteria of applicability and stability than with the criterion of optimal resource use, although these criteria are not entirely unrelated.

A review of some of the literature on World War I and II US economic policy, European reconstruction, and post-disaster economic recovery provides a basis for identifying policy problems for the surviving institutions with special reference to market activities. We did not review the extensive literature on centrally planned economies because of our focus on the trends and tendencies of exchange systems originating from largely market-based economies. Most of the centrally planned economy literature focuses on the inefficiencies and problems of centralized systems and not the transitions from different types of exchange organizations. Therefore, we considered it less relevant to the scope of this study.

9.1 MANAGEMENT OF SCARCE RESOURCES

Much of the literature that was reviewed derives from a policy perspective, thus, there is generally an assumption made, implicitly or explicitly, that government institutions survive largely intact to manage severely damaged resources. When this assumption holds, significant destruction of resources will affect many aspects of formal market activities including the loss of technical capabilities, wealth, and information. Six problems have been suggested by the economic recovery literature:

- o Given the survival of a credible currency system, in the absence of currency reform there will be excess purchasing power. Excess purchasing power can lead to rapidly escalating prices in uncontrolled markets. This problem results from the large cash and liquid-asset balances that consumers may have relative to the number of goods and services that they can purchase following the destruction of resources.
- o There may be additional demands on the remaining resources resulting from the disaster. For example, the additional demands may occur as resources are required for additional medical services, the adaptation of traditional technologies that depend on lost raw materials, the development of new skills, and the need to restore communication and information systems where the physical resources for these activities have been damaged. Another consideration is the escalation of factors underlying market failure, e.g., uncertainty and externalities, so that even undamaged resource markets may fail to operate without government intervention. As an example, the credit market is likely to have difficulty functioning given the prevalence of uncertainty about the future.
- o Given the loss of vital resources, there will be a number of binding time constraints within which actions must be taken, or population survival cannot be assured.
- o There may be an abrupt shifting of demand and supply curves as supplies are damaged and preferences are altered by the disaster. These changes may not only affect prices and quantities but market power balances as well.
- o The shifting of demand and supply curves will likely affect the valuation of assets and subsequently, the distribution of wealth. Such changes hold the possibility for large winners and losers in financial wealth.
- o Financial wealth will also be affected by the disruption of pre-disaster market and distribution arrangements. For example, disruptions may result from the inability of market agents to fulfill contract obligations for financial transactions, production, and consumption.

9.2 LOSS OF MARKET FLEXIBILITY

As Olson (1963) points out, one of the most difficult problems to be faced is the loss of flexibility in the economic system. This flexibility arises from the many possibilities for substitution in the production and consumption processes for goods and services. Thus, as prices rise for particular inputs, producers or consumers can usually respond by making substitutions with relatively cheaper resources or goods. A major disruption in resource supplies will limit many of the substitutions that are technically possible. Loss of information and communication resources will also impede the ability of producers to respond with technological change.

Given no limitations on time, flexibility can be restored to the economic system. Olson's preference for the use of the market system to direct resources is largely based on the assumption of non-binding time constraints. However, the time dimension has been emphasized by Winter (1963), who points out that an environment reflecting the institution intensive assumptions will involve a race between the restoration of productive capacity and the depletion of inventories for vital goods and services.

Considering the problems to be addressed and the limitations on the amount of time available to respond to them, decision makers in the extra-market institutions will have to decide if formal markets can provide viable solutions for resource allocations. While an overwhelming number of recommendations from the research on post-disaster economic recovery support reliance on the market system (Hill 1987), there are some important aspects of the institution intensive scenario which make solutions other than the market solution more likely for goods and services that are considered necessities.

First, market allocations, because they are driven by the decentralized decision making of large numbers of traders, necessarily take time to respond to changing market conditions. Thus, prices may reach prohibitively high levels for a large proportion of the population and remain there until demanders and suppliers find alternatives. How long the high levels will persist depends on the level of market power in the markets as well as the rate of production and technical change. In addition, if barter is discouraged, the price adjustments may be delayed further by restricting the local demand and supply information produced by barter (Leijonhuvud 1973). The adjustment process of conventional price mechanisms may not be acceptable or even feasible in the post-attack environment for the food, shelter, and medical-services markets.

Second, the prevalence of uncertainty is another obstacle for the ability of the formal markets to formulate new plans and respond to price signals. Third, the high survival of institutions within a limited location will imply that they have relatively more administrative capacity than market agents, since local markets tend to be interdependent with extra-local markets. Finally, regulation and government control are not immune to the forces of supply and demand.

With respect to the first three aspects, analyses of World War II policies can be insightful. Given the American and British policies during and after the war, a number of studies have noted how effective these governments were in managing the use of resources that were abruptly in short supply (Olson 1963, deChazeau et al. 1946, Homan and Malchup 1945). Olson argues that the success of British food programs during the war was due largely to the government's ability to encourage substitutions in production and consumption both to increase nutritional output and conserve scarce shipping and storage resources. Government controls were placed on consumption, shipping, and agricultural production and significantly altered economic activity. Food consumption was controlled by rationing, regulations, subsidies, and price controls. A combination of production goals, regulation, and price incentives was used to decrease the production of livestock and increase the production of cereals and grains. In the US case, government control was used to direct resources to the production of war materials and later to redirect these resources to peacetime production. Of special concern for the US cases was the potential for inflation and depression in the post-war transition since there was a surplus of labor.

The British and American cases never approached a level of control implied by the concept of "disaster socialism" discussed by Winter (1968) and others. (Disaster socialism would imply a command system for all major allocations, i.e., complete specification of who gets what and how much they get.) Rather, control was exercised through a system of selective intervention to manage resources where the unaided market process was assumed to be inadequate to meet the country's needs. Furthermore, much of the success of these programs is attributed to the willingness of the population to comply with the restrictions, suggesting they enjoyed a substantial level of public support (Olson 1963). This point is important with respect to the abrupt shifting of supply and demand conditions expected in the institution intensive scenario and seems to be ignored in many of the studies of post-disaster economic recovery. Given that government decisions are not immune to the demands of the governed, to what extent would government control of particular markets or selective intervention be a preferred solution?

9.3 DEMAND AND SUPPLY OF PUBLIC REGULATION

The literature on regulation suggests that political decisions, especially those regarding regulation, are strongly influenced by the attempts of one or more groups to extract an income transfer from other groups (Stigler 1971). These payments are transfers because they exceed the minimum payment necessary to cover the incremental real costs of resources in the provision of the goods or services and involve a transfer of one group's surplus in exchange with that of another group. More generally, the demand for regulation will depend on the costs of organizing the groups which benefit from the regulations and the potential gains from securing the regulations (Peltzman 1976).

The costs of regulation include not only the resource costs of compliance but also the loss of support from the harmed groups, to the

extent that they are organized and aware of the costs being imposed on them. Thus, disparities in the costs of organizing groups that are decentralized can influence the decisions regarding market intervention (Arrow 1969, Benson and Faminow 1986).

In addition to the possibility of increased demand for regulation, there are several reasons that suggest there will be an escalation of government control and intervention into some markets that were largely unregulated in the pre-attack environment. First, in the institution intensive scenario, the government institutions have survived and it is within their traditional roles to respond to requests for disaster compensation. Second, the costs of organizing have been reduced by presenting a much narrower scope of concerns to potential demanders. Further, the suspension of normal activities make it easier for groups to devote their time and effort to organizing, even if these resources are at first preoccupied with emergency activities. Third, given differential damage, there is likely to be some demand to resolve large inequities in the remaining resource distribution. Fourth, the pre-attack motivations to demand regulation for the gain of market power or the protection of income can be expected to survive as well. In fact, these motivations may be even more prevalent in the institution intensive scenario than in the best case, since there is likely to be a reduction in competition among remaining market agents and the gains from favorable regulation vary inversely with the level of competition (Tollison, 1982). Finally, it has been argued that because personnel in public institutions face incentives that are largely status orientated and not financial, public managers attempt to increase budgets or institutional power rather than to constrain costs (Niskanen 1979).

Even if the government rejects the use of intervention and prefers using the price mechanism to allocate goods and services, this may be undermined by behavior in the private sector. In a study of the West Coast Gas Famine of 1920, Olmstead and Rhode (1985) argue that private firms in the petroleum industry voluntarily rationed gasoline without government intervention. Traditional explanations, such as the threat of intervention or attempting to discourage market entry, do not explain the rationing programs followed by leading oil companies at the time. The authors find a more convincing explanation in the conflict of short-term versus long-term goals:

According to SOCal's past chairman, R. G. Follis, oilmen also viewed the purely economic consequences of a large, market-clearing price increase as detrimental to their long-run interest. SOCal's leaders saw the company's prosperity as integrally tied to the economic development of the West, and they accepted considerable responsibility for promoting that development. Given this attitude, Follis thought it would have been unwise to shock the economy with enormous fluctuations in oil prices. To encourage western economic development and the rapid conversion to petroleum fuels, industry leaders thought it essential to assure agriculture and business a guaranteed supply of energy (p. 1054).

In addition, Olmstead and Rhode suggest that the perceived causes of the shortage influenced the decision to ration. Instigated by a drought and an illegal railroad strike, the industry sought to preserve the appearance of being fair and patriotic by not exploiting the situation for short-term gain.

Fairness in the wake of events beyond the control of market agents has been seen as affecting market behavior in other studies. Plott (1986) discusses some experimental economic studies which suggest that an allocation of property rights based on chance will lead agents to share the gains from trade in a more egalitarian way than when the rights are allocated on the basis of skill. Garner (1986) argues that people's feelings of inequity significantly influence their productivity. Thus, "how society slices the economic 'pie' generally affects the size of the pie" (p. 262). Such explanations have been used also in the analysis of public acceptance of risky technologies (Rayner and Cantor 1987). Finally, Arrow (1969) and Hirshleifer (1985) argue that establishing a sense of the greater good through common property rules or public intervention can entice individuals to act in the public interest.

On the basis of these arguments, it is likely that the surviving institutional infrastructure will be called upon to use selective intervention as a response to major destruction of resources. It also seems likely that such intervention will not affect all markets, in particular those for non-essential goods and services may remain relatively unregulated. Of course, it is difficult to specify the goods and services that will be labeled essential in such a world, since this determination will depend on the resource damage. However, food, water, shelter, medical services, transportation, and labor markets are likely candidates.

Although we regard extra-market intervention as outside the rules governing market structures, regulated market structures are introduced in this chapter to demonstrate their implications for market rules. Unfortunately, it is also likely that the extra-market institutions will not respond with appropriate controls in every targeted market or ignore compounding problems such as excessive purchasing power and incentive incompatibilities. Criticisms of the failure of government to balance market controls with appropriate fiscal and monetary policy dominate the post-disaster economic recovery literature. Implicit in these criticisms is the debate over piecemeal policies versus holistic public policies.

The lack of balance in public intervention is often at the heart of the negative outcomes following the intervention. For example, the use of price and wage controls in post-World War II Germany was not balanced with monetary reform to reduce excess purchasing power and fiscal reform to subsidize investment in desired production capacity (Hill 1987). Similarly, although regulatory reform to stimulate production was effective during the use of wage and price controls in the US during the 1970's, the program was undermined by the expansionary fiscal and monetary policies early in the period (Pohlman 1975). Finally, even if well-intended, the uncoordinated or unbalanced efforts of extra-market

institutions may create shortages or disincentives to supply that will be conducive to the formation of market structures outside the legitimate market system.

Finally, under the conditions of this scenario, it is possible that the government could elect to enter the market directly as a quasi-public trading agent, e.g., a corporation similar to the Tennessee Valley Authority. While the use of state-owned enterprises is quite common outside the US, for example, in Canada, France, and the UK, they are not used generally to correct market failures in the contemporary US. A major exception is the use of local municipalities to produce and distribute electricity. An increased use of this type of instrument to facilitate market activities is likely to depend on two factors. First is the governing authority's ability to obtain the resources necessary to start such an enterprise. Second is the belief that the public sector has some comparative advantage relative to a similar private undertaking.

9.4 ESSENTIAL GOODS AND SERVICES

The exchange of non-essential goods and services will be affected by other markets for essential goods but is likely to be free of additional government control. Production may be affected if the process uses resources that are determined to be essential, and continued production of the non-essential good may even be prohibited. Given the additional demands on productive resources by essential goods, any continued production of non-essential goods will probably be small scale and localized. Trade may continue for a time under the pre-attack market arrangements, for example in a particular store, but as more and more resources are directed to essential activities, transaction-cost considerations will force a consolidation of this type of market activity to a peasant-market structure with general marketplaces, similar to pre-attack flea or antique markets. Surviving malls and shopping centers are likely spots for such marketplaces to develop. Exchange in such public places will inhibit extreme use of monopoly or monopsonist power, reduce marketing or advertising costs, and reduce search and informational costs. Given the extreme reduction in resources, there will be strong incentives to reduce the costs of exchange for non-essential goods.

The markets for essential goods and services are the most susceptible to government intervention to alter the market process. This follows from not only their importance to population survival, but also the conditions present to increase substantially the demand for regulation and control in these activities. We consider three areas of intervention that will alter the rules of pre-attack market structures: regulatory controls, fiscal policy, and monetary reform. The first area can affect any number of specific market rules, including the transaction rules. The second and third areas have a direct effect on demand and supply, but in general, only indirectly affect transaction rules through changes in the degree of competition or market power, i.e., shifts in market structures.

Stone (1982:10) defines regulation as "a state-imposed limitation on the discretion that may be exercised by individuals or organizations, which is supported by the threat of sanction." In the analysis of unregulated market structures, discretion is often limited by technical or network constraints but unconstrained by government intervention with the exception of illicit activities. Rules in the associational and criminal markets reflect indirectly the enforcement of regulations on legitimate activities.

For the institution intensive scenario, the objectives of select intervention through regulation are likely to be redirecting and expanding productive capacity, conserving targeted resources, and population maintenance. Achieving many of the objectives of the pre-attack regulatory system will become prohibitively expensive in the post-attack environment. Given that there are few resources for regulatory innovation, regulators probably will prefer tools that are either familiar or easily enforced. Three types of tools which have been used in prior emergencies are process standards, rationing or fixed-allocation systems, and wage and price controls.

Process standards include regulations which specify minimum or maximum limits on aspects of the production process. These aspects can include inputs and outputs, as well as quantities and qualities. By imposing process standards, regulators can restrict the set of possible production choices available to suppliers. Alternatively, regulators may expand production choices by removing process regulations imposed by the pre-attack regulatory system. As an example, regulators removed certain restrictions on livestock grazing on set-aside acreages to increase supplies of meat during the wage and price control period of the 1970's (Jones 1975). Restrictions affecting either maximum or minimum quality levels are likely to be imposed on the processes to prepare vital food, as shown by the British example during the First and Second World Wars.

Process standards can be used effectively where compliance costs are reasonable. In general, they will affect the supply rule regarding institutional constraints. If the regulations appear unpredictable, they may become one of the major uncertainties facing suppliers and thus affect transaction rules. In the absence of voluntary compliance with government regulations, monitoring costs and reporting by suppliers to assure compliance will place an additional demand on resources. This demand will vary directly with the number of suppliers to be monitored.

Berenbeim (1981) argues that one unintended effect of process regulation is its differential impact on small and big firms. In essence, there may be economies of scale with respect to meeting regulations, especially in the demonstration of compliance. Further, monitoring costs will be lower with a few large producers than in an industry made up of many small suppliers. In addition, less competitive, large firms may be more resilient to the impacts of increased regulatory costs because they tend to start from a position of excess profit margins relative to small, competitive firms. Thus, increased government intervention, undertaken to direct the flow of essential resources in short supply, may also be a contributing factor

in increasing the concentration of market power. If regulatory costs are high, then the government may be forced to limit the numbers of legitimate suppliers as in oligopoly or monopoly markets, in order to have a market at all.

Especially in the two World Wars, rationing was commonly applied in situations where important resources were severely restricted. In addition, it was an important policy tool in the reconstruction plans of many European countries (Milward 1984). There are several general ways a government may ration resources or goods. The government may establish allocation priorities and thus, alter the rules of who, when, or where the good may be demanded or used in production. These priorities may be linked to a quota system regulating the amount each legitimate demander or producer may receive, thus altering the rule of how bids to buy or offers to sell are made. Finally, since allocation schemes and quotas limit supplies, they may shift the unregulated market structure to a less-competitive structure.

Rationing may be performed in the distribution of goods and services using coupons or queueing. These methods are likely to completely alter pre-attack supply and transaction rules, affecting not only who supplies, but how, where, and when transactions take place, and the transferability of property rights. An extensive system of rationing by queueing may even alter the medium of exchange, where money may be replaced by waiting time (Barzel 1974). Efficiency in the allocations of the rationed goods may be preserved if secondary trade among individuals is allowed by the rationing rules (Sah 1987).

Finally, government may impose wage and price controls and then allow sellers to distribute their available supplies at the fixed levels. In the system of market-structure rules, these controls will affect how offers to sell are made and how goods and services are priced. Where the government fails to set priorities for the distribution, it is likely that the sellers will devise an allocation system of their own. For example, sellers may sell on the basis of: first-come, first served; established trading relationships; or only when monetary prices are supplemented with payments-in-kind.

Selective intervention through fiscal policy probably will be very similar to the institutional processes that survive in the institution intensive scenario. Generally, every level of government engages in fiscal policy of some kind to encourage certain economic activities and discourage others. Further, taxing and spending capabilities will be in place, although some adjustments to the system may be necessary. In an effort to influence supply and demand for essential goods and services, the government will be in a position to affect prices through taxation, subsidization, and government procurement. Fiscal controls may be used to shift supply and demand, as well as to alter production or consumption processes by the differential taxation of inputs or goods.

Finally, monetary policy may be used to remove purchasing power from demand. While this can be done generally by monetary reform, it can also be used to direct resources into specific markets, and away from others, by altering the worth of specific asset types. Such a

policy was followed in post-World War II Germany, where bonds and mortgages were revalued in the new currency at a higher exchange rate than the rate used for more liquid assets (Hill 1987).

9.5 UNCONTROLLED MARKETS

If government controls are not politically supported or are grossly inefficient, it is likely that trade for the essential commodities will be conducted in markets outside the legitimate or controlled structures. Depending on the level of resources devoted to monitoring and enforcement of the intervention controls and the level of resources necessary to evade the controls, informal markets in goods and services may arise that exhibit the rules characteristic of the associational market or the criminal variation of this market. Radford (1945) describes the markets within a prisoner of war camp where exchange rules mimicing market activity were allowed to flourish in spite of the highly regulated atmosphere.

Where government enforcement is lenient or monitoring of formal transactions and/or activities very costly, associational market structures may arise to reallocate goods to more highly valued uses than would occur under the controlled mechanism. Where enforcement is strict or monitoring of formal activities very easy, trade in legal associational market structures will be too risky, and the criminal variation is a more likely outcome. However, unlike the best case scenario, trade in institution intensive informal markets is likely to occur at prices that are higher than the formal markets prices, as economic agents attempt to obtain goods regulated by rationing or price controls.

This scenario concerns a world that is institution intensive relative to available, usable resources. We expect the associational markets, peasant marketplace, imperfect competition, oligopoly, and monopoly markets to be the primary structures of exchange in this scenario. Exchange approaching the perfectly-competitive market will be very unstable because of the high levels of uncertainty and the likelihood that it will be profitable for groups to form coalitions. Further, although imperfect competition may exist, it will be difficult to maintain without explicit government intervention to prevent mergers among suppliers.

9.6 FUNCTIONS

The institution intensive scenario resembles the best case in that it has an operating infrastructure. Below, we examine how the basic functions will be performed by the remaining institutions and exchange structures. The severe limitations on available resources to perform the necessary and facilitating functions for exchange in the institution intensive scenario produces significant differences from the ways they are performed in the best case scenario.

1. Define property rights. The local court and regulatory systems will continue to define and enforce property rights in the institution intensive setting for most of the formal-market transactions. However, individuals are likely to seek coalitions with other property owners since at the low resource level, property disputes may be expensive to settle in the court system and protection of these rights will also be costly. In illicit informal exchange, property rights are defined within the criminal market.

The government may use shared or common property rules to encourage an atmosphere of fair distribution as one way of establishing its authority position. This is particularly important where the surviving population is making demands on the government to regulate the distribution of essential goods and services.

2. Convey supply/demand information. In the best case, prices or social networks largely performed this function. Given that prices may be either controlled or supplemented with payments-in-kind in the institution intensive scenario, supply/demand information will have to be collected and distributed through other means. One source might be government sponsored programs similar to those used by the Cost of Living Council in the 1970's. Another source may be the increased network activity by market agents, especially where the rules of associational or peasant markets dominate exchange. Information reported through network ties or the visibility of displayed goods (or lack of them) for sale may act as a substitute for the formal price mechanism.
3. Provide opportunity for legitimate transactions. To some extent the government will perform this function directly when it uses a rationing or allocational mechanism to distribute goods and services. Where government regulation acts to create less competition among firms, the resulting market power may limit some of the transaction opportunities for demanders. In the informal exchange, the associational networks will serve to expand the trading opportunities among members.
4. Enforce contracts other than by physical coercion. The desire for repetitive exchange will act to enforce contracts between traders in divisible, non-essential goods. Where there are non-divisibilities in consumption, advertising and other informational services will be costly since communication resources are limited. Thus, the conditions are more consistent with the informal exchange rules governing the enforcement of property rights. In previously formal markets, traders are likely to look either to the formal legal system to enforce contracts or seek membership in a coalition to increase their market power.

6. Settle disputes. To the extent that the parties involved in a dispute are difficult and expensive to identify, the dispute will probably remain unsettled. The government may desire to demonstrate its willingness to settle disputes in order to avoid civil unrest. Traders that enjoy some degree of market power may settle disputes by re-negotiating prices after the transaction is complete. Such actions favor the rules of imperfectly competitive markets. Thus, we would expect an increase in the network ties or trade relationships among parties to avoid the risk of unsettled disputes.
7. Maintain civil order. This function will be carried out largely by the surviving government authority. In the peasant marketplaces, a market patron, e.g., a religious leader, may serve to maintain civil order in localized marketplaces.
8. Legitimate other functions. The government's authority to legitimate its control over other functions, including enforcement, pricing, and guarantee currency, will be a problem when this authority is not vested with the surviving level of government of the pre-attack period. For example, a city government will not have the authority of the state government, which, in turn, does not have all the powers of the federal level. Unless some program is in place, pre-attack, to transfer these powers to the surviving government level, and the program is sufficiently acceptable to post-attack survivors, then surviving government authority for specific functions may be challenged. Where the authority is vested with the surviving government, for example, in the case where federal infrastructure survives, the authority must be supported by the surviving population because of the lack of resources to coerce private behavior.
9. Guarantee currency and close substitutes. The guarantee of currency is one function that may be challenged in the absence of public support for the surviving government, especially if this government is below the federal level. As with the best case, the value of close substitutes will depend on the primary markets for their exchange. However, these values may be distorted by government interventions, especially if there is government confiscation of these resources.
10. Administration of distributive justice. Where goods and services are rationed, distributed through allocation schemes, or taxation is used to redistribute wealth, the government is engaging directly in distributive-justice activities. The private sector may also engage in these activities within associational networks, or by forgoing profit opportunities as in the case of the West Coast Gas Famine.
11. Monitoring and modifications of operations in response to changing circumstances. Programs that are directed by the governing authority to allocate scarce essential goods are likely to use command rules. The rules will not respond to

changing demand and supply information any better than traditional rules of fixed allocation, unless additional mechanisms are simultaneously put into place. Markets where competition is limited also will be slow to adjust to changing market conditions, since the threat of shifting market shares is not very great, i.e., conditions are more favorable to monopoly or oligopoly rather than imperfect competition. Exchange that is conducted through the associational markets is likely to be the most responsive to changing conditions where information about the changes can be observed and market power between buyers and sellers is more balanced.

12. Mitigate risk. It is not likely that the formal market structures will be able to perform this function without government intervention. This follows from the loss of resource diversity and increase in uncertainty. Thus, market traders will not have the options of using traditional mitigation mechanisms offered in the best case markets: diversification of resources holdings and insurance (Stiglitz 1974). Risk mitigation may be performed by the strengthening of network rules, thereby increases the importance of associational exchange or less competitive forms of the formal markets.
13. Exploit comparative advantage, specialization, and division of labor. Due to the escalation in the instances and causes of market failure, it is unlikely that these functions will be performed effectively while resources are severely restricted. Further, many pre-attack skills will be of little use in the institution intensive scenario. Finally, these functions will be dampened by the effects of government control and direction in essential markets. Other than specific intervention by the governing authority, this function may be fulfilled by the rent-seeking behavior of market agents. In other words, as agents attempt to form coalitions or networks to increase market power, they may also exploit labor specialization and comparative advantage.
14. Reduce transaction costs for intertemporal or interregional transactions. Interregional transaction costs will be reduced by the restoration of communication and transportation resources. Government intervention probably will be required because of the public-good characteristics of these services. Intertemporal transaction costs are likely to be high given the pervasiveness of uncertainty. Except for network transactions, credit will be difficult to obtain from private lenders in the absence of government guarantees and subsidies.

9.7 CONCLUSION

The extra-market institutions will be required to play a more dominant and visible role in the institution intensive scenario than under best case conditions. In addition, we expect a much narrower

range of formal market structures to function in the post-attack environment because there will not be the resources to support market diversity. Furthermore, the factors which commonly underlie market failure will be exacerbated under institution intensive conditions. These factors include information and transactions costs, externalities in consumption and production, extreme market power, and uncertainty. Finally, because the institutional infrastructure will be largely intact, we expect surviving groups to increase their demands for government intervention in the wake of mass destruction of resources.

We expect many of the rules used in the best case to influence the rules of the infrastructure in the institution intensive environment. This is even more plausible if federal and state institutions survive intact. Most trading is expected to operate under a largely private-property system, except if the government actively attempts to enforce common property rules to promote social cohesion among survivors or the government enters the market directly as a quasi-public trader. Open access to property is very unlikely, since this would only exacerbate civil unrest and deterioration of confidence in the trading environment. Where unclaimed property exists, the government will probably institute a rule to establish a new owner, for example, homestead rules.

Currency can be guaranteed if the survivors see the government as a legitimate authority to perform this function. Continued credibility of the currency is more likely where it is sufficiently circulated and recognized by commercial agents. The encouragement of general credit may be more of a problem, since private traders may be reluctant to take even minor risks involving strangers.

The highly uncertain environment and drastic reduction in consumption and production possibilities may act to increase the market concentration among consumers as well as among producers. Consumers will attempt to transact in associational markets to reduce transaction costs. Suppliers will seek mergers to reduce the uncertainty of input availability and output demand. Further, government monitoring and enforcement activities may encourage market concentration as suppliers seek to minimize the costs of compliance.

Establishing a credible position of authority will be a significant and difficult task for the surviving government in the institution intensive scenario. This will be true for local and federal levels of government. In the presence of massive destruction of resources, the government will have to rely on the support of the surviving population to enforce its authority over many critical functions. Without this support, the environment could decay quickly into the conditions of the worst case scenario. Thus, responding to the political demands of the survivors to earn their support is likely to place significant constraints on the government's options in restoring economic activity.