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Transforming Socialist Farming in Hungary:

A Rational Choice Analysis

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Executive Summary

Based on field work, farm interviews, and a random sample of 107 farm enterprises that succeeded collective farms, Hungarian researchers and the author studied, among others, how socialist agribusiness (collective farms averaging 4,400 hectares and 400 employees) changed into private farming enterprises.

Although the privatization legislation provided an option for farmers to exit with a physical asset, few did so, individually or in groups, for reasons predicted by the economist Frederic Pryor and the farmers themselves. Consequently, collectives were changed into large cooperative farms whose shareholders are the employees, former employees, and retired people. Many acquired land as private property and rent it back to the large enterprises, though some is farmed in small part-time family units.

In the division of common property to private property shares, years worked and salary/wage were the prominent allocation dimensions. Efficiency was weighed against distributive justice and fairness; thus the well-being of the most vulnerable (retired, unskilled women workers) was safeguarded in most enterprises.

Because the transformation occurred amidst a major depression, all farmers and rural people have experienced a drop in their level of well-being. Overall, those with human capital and social capital (business connections beyond the village and the enterprise) have fared better than those who received a large property share in the division. Until the farm economy becomes prosperous, farm assets, land, enterprise shares are sold much below nominal value and cannot be used to raise capital. The low skill and aged group in the rural population had strong user rights and entitlements (as to work) under socialism, which provided a decent living. The ownership of private property does not provide that now, not alone. Although the pauperization of villages underscored by some analysts is premature, exaggerated, and one hopes transitory, the agricultural economy will have to improve before the benefits of privatization are realized for many.
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Transforming Socialist Farming in Hungary: 
a Rational Choice Analysis

From 1990 to 1995, some 1400 collective farms cultivating 75% of Hungary's farmland, with an average of 4400 ha. and 400 workers, changed into 2000 cooperatives owned by shareholders and many other privately owned farm enterprises. The collectives were socialist agribusinesses with some industrial and service sidelines. The change was mandated by legislation on the division of common property, on land privatization, on enterprise transformation, and on bankruptcy. The intention was for Western European type commercial family farming to get rooted, but for reasons explained by Pryor (1991) this was unlikely. Implementation of the laws was left to local bodies, the general assembly of the collective farms, land committees, and other groups, and most importantly to agromangers and individual farmers. Because of the depression of the early 1990s in former communist states, about a quarter of the collectives went bankrupt or were reorganized during liquidation. Also important were the termination of subsidies, high inflation, the drying up of farm credits and other macroeconomic policies and trends that impacted unfavorably on agriculture (Oberschall and Hanto, 1996). Still, unlike much industry and banking, farming in Hungary is now a private enterprise activity.

I have studied this transformation since 1989, at first on field trips and with unstructured interviews, and since 1995 systematically in association with Hungarian researchers at the Budapest University of Economic Sciences and at the Godollo Agrotechnical University, and with my colleague Elisa Bienenstock. I thank the National Council for Soviet and East European Research for research support. In addition to in-depth case studies we surveyed 107 farm enterprises in 4 counties, and produced two video documentaries titled "Privatization in Hungarian Agriculture ( Hungarian version, 46 minutes; English version, 28 minutes). In this paper I will not report the nationwide macro findings but focus on micro level rational choice models of individual and group actions and choices.

I must emphasize that privatization of common property and of land and the creation of
capitalist enterprises owned by shareholders, while important, does not in itself create a functioning market economy. How a market economy is being created and how well it performs is the topic of another paper (Oberschall and Hanto, 1996).

To understand the choices faced by farmers, one needs to know the constraints and opportunities that the privatization laws created. Under land privatization, partial compensation for land collectivized in the past was made to former land owners, their heirs, and employees and former employees of collectives, under a voucher scheme and local land auctions. By mid-1995, in some 21,000 auctions, 535 thousand people had gotten close to 2 million hectares, about 40% of all arable land in Hungary, for an average 4 ha. land. The collectives' remaining land was allocated to members in the common property division, except for a small amount already held as private property. Together these two laws made 3.3 million ha. covering 70% of all arable land into private property, the largest land reform in Hungary's history. About half this land is farmed by small family farmers, many part-time; the other half is rented by the successor farm enterprises to the collectives (AKII, 1995).

Under the common property division law, members had choices within broad guidelines on criteria for allocation of assets, but had to include non-member employees and former members and employees as well. Members could exit with a physical share, but less than 10% did. It is estimated that 40% of assets passed to retired members, 40% to current working members, and 20% to former members and employees, the so-called "outsiders" who did not live in the locality (Andorka et al. 1994).

The enterprise transformation law made collectives into shareholders' cooperatives and other corporate enterprises. The 1400 collectives have become 2100 cooperatives, most of them downsized to between 30 and 100 workers, and many other smaller farm enterprises. Employment in agriculture enterprises is down to 180,000 from six hundred thousand in the late 1980's. Many of those who lost jobs are small part-time farmers, retired, unemployed.

There were other constraints on choices. Economists and farm experts expressed doubts that technologically sophisticated socialist agribusiness could be divided into smaller, family farm enterprises (Pryor, 1991). The entire farm infrastructure from production, marketing through credit was geared to large enterprises. Farm workers had become highly
specialized in a complex, hierarchic organization. It was not technologically possible to divide some common property (huge cold storage facility) and physical division would destroy the value of an integrated facility (removing most cows from a dairy). Thus a variety of ownership and organizational systems had to be devised to enable privatization. In time, some of these systems can spin-off into viable, medium sized farm enterprises. Despite these constraints a small number of commercial family farms were established, but I will not report on them here.

From an analytic viewpoint I am struck by the great variance in individual and group behavior. Collectives only 20 km. apart, with similar resource endowments, made divergent choices with very different outcomes, and quite different subsequent performance (from bankruptcy to actually turning a profit in 1995). The total transformation process itself is extremely varied. Some decision nodes can be modeled as a zero-sum game among members; others are a classic n-person social dilemma. There are negative sum games, sharing group or team formation, coalition formation, take your pick! Moreover, there was a great deal of uncertainty and information was lacking and unequally distributed. Here are the principal decisions taken in most collectives:

1. Whether to split the collective into smaller constituent units (villages) that existed before the 1970's consolidation into megacollectives.

2. Choice of criteria for division of common property and weights assigned to them, e.g. years worked, salary, assets brought in at start; also calculation of asset share for each person. It was a classic zero-sum game in as much as a fixed pie had to be allocated to a fixed number of actors. Interest was tempered by distributive justice in these decisions.

3. Valuation of all assets owned by the collective and determination of debt. It entailed huge transaction costs and some disagreements on the value of assets that were interdependent and non-movable.

4. Decision to exit individually, in a group, or stay. It can be modeled as an n-person PD.

5. For exiters, negotiating physical possession of assets equivalent to their asset share in the division. Some law suits resulted from it.
6. For stayers, deciding the legal and organizational form of the successor farm enterprise (cooperative, limited liability co., many complex forms).

7. Land privatization decisions: election/appointment of a committee that designated and measured out plots for auction; conducting the auctions; negotiating land swaps and consolidation after the auctions; contracting land by lease from the new owners.

8. Electing a new management team and making new labor contracts with workers, usually with only a fraction of the previous labor force.

9. For enterprises with large debt and under pressure from creditors, sale of assets, rescheduling debt, and failing that, going into bankruptcy and creating a new organization to continue some farming. These situations were negative sum games.

In this paper I analyze the choices under 2, 4, 6 and 7.

The division of common property

Distributive justice, some balance between needs and contribution, in particular not to leave the elderly in poverty, entered these decisions in addition to personal interest for the largest share one could get. Choosing the criteria and weights for division intensely engaged the membership. In several places members got the accountant to calculate everyone's share under varying weights and post the results on bulletin boards for everyone to inspect. In many collectives, the largest bloc of voters in the general assembly was made up by the retired. They had accumulated the largest number years employment, but at low wages. Agromanagers and technical personnel, in their forties and fifties, had fewer years but at high wages. In weakest position were unskilled workers and the young, many of them women, with low wages and many part-time. A large weight to years employed favored the retired and many unskilled farm workers; a large weight to wages favored the agromanagers and technical staff. All locals had an interest to keep asset shares from "outsiders".

The strategic considerations were complex. Huge asset allocation to the retired at the expense of the active workers would diminish the incentives for managers and technicians to stay rather than exit, thus jeopardizing viability for any sort of large farm enterprise. Yet a huge allocation to actives would create hardship for the elderly, jeopardize inheritance
prospects, and transfer assets to "outsiders". Even with a large share few could expect to farm on their own for making a living. Most saw the choice as continuing a viable agribusiness in the community and satisfying all interest groups by compromise. The retireds' claim that their past, hard work and sacrifices had built the agribusiness was recognized, and intergenerational solidarity also figured in. In a minority of collectives the assets brought in at start also became a criterion. It had huge transaction costs since the horse and plough technology of the fifties had to be evaluated in terms of the tractor, combine and irrigation technology of the present, among others, and records were missing. As a result, years employment and wages were the most frequent criteria chosen, and as we shall see, the weights voted tended to favor years, and thus the retired.

A choice model:

\[ T \] is total assets of the collective
\[ a \] is farmer's asset share
\[ W \] is total wage base; \( w \) is farmer's wage accumulation
\[ L \] is total years employment base; \( l \) is farmer's years employed
\[ q \] is the weight given to \( w \); \( 1-q \) is the weight of \( l \).
\[ a(q) \] is the production function for \( a \) in terms of \( q \).
\[ J(q) \] is the production function for distributive justice expressed as preference for contribution relative to need

\[ U(a,J) \] is the farmer's utility function

the production function for \( a \) is:

\[ a(q,l,w) = T[ q(w/W) + (1-q)(l/L) ] \]

there are three situations: if \( w/W \) much greater than \( l/L \), the function is positively upward sloping, as shown in Fig.1a

if \( w/W \) is about the same as \( l/L \), the pf. is horizontal; regardless of \( q \), the farmer expects the same amount of \( a \)

if \( w/W \) is much smaller than \( l/L \), the pf. is downward sloping, as in Fig.1c.

I assume that the Justice pf. is single-peaked, inverted U-shaped, as in the figures. This
Fig. 1. Production Functions for Justice and Ascentancy

1a: \( \frac{W}{W} \gg \frac{L}{L} \)

1b: \( \frac{W}{W} \approx \frac{L}{L} \)

1c: \( \frac{W}{W} \ll \frac{L}{L} \)

Fig. 2: Production Possibility Frontier and Tangent with Utility Indifference Curves.

FARMER CHOOSES at \( \alpha \) on the average \( q \).
Without moral sense, farmer would choose \( q = \frac{1}{2} \)

FARMER CHOOSES ON THE GROUNDS OF JUSTICE ALONE, where \( q \) maximizes \( J \).
Without moral sense, farmer would choose at random \( q \).

FARMER CHOOSES \( q \) on below average \( q \).
Without moral sense, farmer would choose \( q = \frac{1}{2} \).
means that actors have a preferred balance of needs and contribution justice, and that increasing deviations from that balance in either direction makes for a sense of growing injustice.

A comparative statics analysis constructs a production possibility frontier (ppf) from the two pf-s, and choice of q is determined by the tangent between the utility function and the ppf. All this is shown in Figures 1 and 2.

In the w/W greater than l/L situation, corresponding to agromanagers and technical staff, choice is at a in Fig. 2a., which results in higher than average q, thus favoring their expected asset share, but below q=1 which is the amoral choice. Note that their choices are only somewhat altruist or justice minded. Even a most needs-justice disposed person for whom the entire J pf shifts to the left does not choose zero q but a positive though low q. A totally amoral agromanager for whom J does not enter the utility function does choose q=1.

In the situation where w/W is about equal to l/L, asset share expectation is about the same regardless of q; thus, as shown in Fig.2b people choose q that maximizes their sense of justice. Without a moral sense, these people would choose q at random, or more likely make side deals to sell their vote.

The third contingency where w/W is less than l/L, which characterizes the retired, as shown in Fig.2c, people choose low q which favors their asset share, but not q=0 that would maximize it. If they were amoral, they would all choose q=0.

It should also be noted that I did not exogenously create these contingencies which in fact correspond to the observed interest groups, but that they follow from the production functions themselves. A further observation is that without a moral sense one would get a totally polarized membership, some voting q=0 and the others q=1. With a moral sense in the model, there results a wide distribution of choices making compromise and agreement much more likely. Our research indicates that discussion, compromise and agreement was the most likely in these common property division decisions.

What actually happened?

In 85 collectives studied, years employed had a median weight of 40%, wage had a
median weight of 33%, the balance made up by other factors, esp. assets at start. Twelve collectives chose 100% for years employed, and only three chose zero percent, whereas none chose 100% for wages and 26 chose zero. The ratio q is .45.

We can compare q very roughly to some information on distributive justice preferences in Hungary. Kluegel et al. (1993) report that Hungarians agreed or strongly agreed with the following statements on a fair income distribution:

- equal shares for all........23%
- according to need..........65%
- hard workers deserve more..87%

If we form a ratio from the last two figures (corresponding somewhat to w and l in my analysis), we get q = .57, which is more "contribution" friendly than .45. Of course the comparison is flawed since in the common property division farmers were moved by their own asset share prospects, not only abstract principles.

How did our respondents - mostly in managerial positions - evaluate the division? We asked for ratings on fairness, efficiency, cooperation and some other dimensions. Cooperation and consensus were rated high, but many thought that members didn't understand the division. On justice and fairness, they gave a median fairness rating, and on efficiency the rating was bimodal: some thought the division very efficient and others very inefficient (for subsequent farming) because "outsiders" got a substantial asset share.

Here are some quotes, on fairness and justice:

- 018-(very fair) because all variables contributing to asset growth, initial assets, contributed work, were taken into account
- 026-(medium fair) according to length of employment, the retired had an advantage, since they were in the majority, but for the active members (current farmers) it was unfair.
- 030- (very unfair) those who didn't deserve it got assets. Giving outsiders such a share places a huge burden on the membership.

Here are some answers on efficiency:

- 016- (very efficient) the majority acquired a sense of ownership
- 024- (medium efficient) there was too much fragmentation of assets
016- (very inefficient) no one gave a thought to production, only to what they would get. It will harm efficiency for a long time.

**Exiters and stayers**

Exiters could do so individually, or in a group, and demand physical assets (machinery, livestock) equivalent to their asset share. Land was excluded because bureaucratic procedures had delayed voucher distribution and land auctions which had legal precedence over subsequent land allocation of the residue. Exiters thus did not know beyond a rough estimate how much land they would eventually own. Also unfavorable for individual exit was that the typical asset share was worth much less than what an independent farmer would need to make a living, and the economic risks of farming in 1992-1994. The most likely individual exiters were retired members who wished to get some quick cash from the sale of movable assets or who wanted to help a family member get started in a private farm. There were some group exiters who bid for an entire production facility (sheep farm) by pooling their asset shares. Altogether less than 10% exited.

Granted the hazards of exiting, one might nonetheless ask why more members didn't exit as teams or sharing groups owning and working a viable production facility. Without developing a formal model, I believe the following occurred: there are considerable transaction costs for creating a team organization, which has to cover not only production but marketing, finance, supplies, and some other activities. Those who had the management skills for team leadership preferred to do the same in a larger farm enterprise by staying in the cooperative, or strike out on their own or with a couple of partners. Just as important, for such a venture to be profitable, it must have a large initial pool of members and assets to achieve economies of scale, yet it must also employ fewer workers than the number of team members. How was the team to decide who would work and who wouldn't when the principal benefit was earnings from work? Finally, even a sizable group of exiters might not be able to cover the full value of a productive asset with their shares, whereas, as we shall see below, they might achieve a similar goal by staying within the enterprise for a period of time.

Strategic interaction on exiting and staying can be modeled as an n-person PD, shown
in Fig.3. Too many exiters would wreck the viability of a successor farm enterprise for these reasons:

1. if many movable assets are removed from a facility (cows from a dairy), the remaining plant and stock become loss making

2. if linked resources are decoupled, as cows from milking machinery and refrigeration storage, the production unit loses efficiency and becomes loss making

3. if exiters remove movable assets and stayers are stuck with immovable assets (the administration building, storage sheds), the stayers' assets don't provide earnings. In the words of one respondent, "we would be left with buildings and ashtrays."

Thus a critical mass and mix of assets, and thus of members, had to be carried over into a successor organization for stayers to protect their livelihood. Everyone also knew that if a majority exited, many assets would loose value and their asset shares would correspondingly decrease. Thus one was better off exiting if many exited, but that would set in motion a bandwagon with 100% exit and zero stayers. Because the retired were the largest bloc, a concerted exit by them would wreck any sort of agribusiness. My sense is that one reason the retired were favored in common property division was because of an unwritten contract, or rather an understanding, that most of them would stay.

U(e) is the expected net benefit of exit; U(s) is the net benefit of staying. U(s) increases positively with the number of stayers. At s* the enterprise is expected to remain viable; with fewer stayers the chances of loss making and eventual bankruptcy increase. Beyond s' staying dominates exit. U(e) is not constant; it has a small positive slope up to B because with many exiters the full value of one's asset share cannot be realized (problem of immovable and interdependent assets). Farmers know that even though exit dominates staying up to s', they are better off staying with B others than exiting at A. The decision was one-time, thus the game was not iterated. Everyone had to declare by the same date, though in most places people were given a chance to change their choice over a month or two. Formally there is no stable equilibrium except at zero and 100%. If assurance is allowed in the analysis, when farmers believe that most will stay, the result is 100% stayers; if there is no such assurance, then all will exit.
Fig. 3  
Exits and Stayers

\[ U(e) \]

\[ U(s) \]

\[ U(s^*) \]

\[ U(e) \]

\[ U(s^*) \]

\[ U(s, B) > U(e, A) \]
In one case study where there was no trust, the agromanager group kept their intention of exiting secret until the midnight deadline of the last day for declaration, with most of the membership believing they would stay. Note that secrecy was to their advantage since their exit share was expected to be greater with few other exiters. The next morning there was great anger among the stayers, and in large numbers the stayers submitted their exit declarations despite expiration of the deadline. Since the original exiters now realized their shares would decrease a great deal, they in turn withdrew their exit declarations. They would be better off staying at B than exiting at A on Fig.3. However, this was an unusual case (Csite, 1993).

More typical was a collective with about 450 members covering three villages where the leadership was in favor of maintaining a viable agribusiness. The mayor of one of the villages and the chief agronomist, both active local communists, persuaded a handful of malcontents and a few retirees to join them for a planned group exit and for getting hold of an important production facility with their combined shares. As rumors spread that the enterprise might bust up, the director (CEO of the agribusiness) rallied the members, and after meetings in each village to explain the importance of maintaining the enterprise, he debated the leader of the opposition clique at a huge general assembly of the membership. As he put it, "Their case fell apart; there was trust." In the end only 19 exited, the two communists and 17 others, and what assets they removed were unimportant.

From our in-depth interviews it was transparent that trust creating assurance was important in two ways. The retired, the largest interest bloc, could wreck the whole enterprise by exiting. After all they had a short terms take in getting assets that could be sold for cash or given their children at a time when pensions were declining, nor did they have a long-term interest in an enterprise that would at best provide them with low wage, part-time employment, and was unlikely to pay dividends on shares for some time. Also critical was the behavior of the agromanagers and some key technical staff since their human and social capital was needed in the successor enterprise. They had the largest asset shares and were the most likely to succeed in commercial family farms and other businesses if they exited, and had high opportunity costs for staying if the enterprise shrunk a great deal. There grew an unstated understanding among members based on trust and creating trust: members would choose
weights at common property division that favored the retired, and they in turn would stay. As well, members would reelect the agromanagers in the transformed enterprises, and they in turn would stay to lead them. Thus exiters in most localities were less than 10%, and most managers were reelected when they stayed.

The figure depicts only central tendencies, yet there was a great deal of variance on the net benefit of staying and exiting: opportunity costs, the probability of being rehired in the successor enterprise and thus receive earnings on top of protecting share value, and other factors made for diversity. A time frame also played a part in the decision: quick present gain weighed against the risk of greater future gain. An expectation of bankruptcy despite a large proportion of stayers set in motion an avalanche of exiters, or as I describe later, cliques who salvaged their share and left others with zero assets.

**Land privatization**

The law was quite specific: certain categories of persons, former owners of land and their heirs, collectives' employees and former employees, and some others were entitled to land by applying for vouchers enabling them to bid for farm land at auctions held where their land had been alienated or where they had worked. Vouchers could also be sold for cash and used for some other purposes like buying shares in enterprises that were being privatized by the State Privatization Corporation. A land committee measured out plots of land of varying quality and several auctions were held over a 2-3 year period because the state agency processing the claims were overwhelmed by the number of applicants and issued vouchers with much delay. The law valued a hectare quality point (goldcrown) at 1000 Ft. Since an average farm plot has 18 goldcrowns, 18 thousand forint ($140) per hectare farm land was a fabulous price by Western standards. The law also mandated a 500 Ft minimum bid per ha/goldcrown. Not surprisingly, in some twenty thousand auctions, the buyers agreed to make only minimum bids, and let a local land commission sort out later which specific parcels belonged to whom, and to organize land exchanges. The exceptions were competitive bids for non-farm commercial plots near cities and bordering highways. The result was that twice as much land was thus privatized than the legislators anticipated. The remaining land to be included in the
common property division was thus much diminished and the asset shares lower than anticipated. Another result was that about a third of the land cultivated by the new agribusinesses was now owned by non-resident "outsiders." One survey indicates that cooperatives now rent 61% farm land from their own members, 28% from outsiders, and 11% from others (Andorka et al, 1994). In the country as a whole, there are 1.5 million landowners (about half the population if we figure in family members), though most own miniplots of 5 ha. and less.

There is much dissatisfaction among farmers about land privatization, not the privatization as such but about who got the land. Over 50% of farm managers in our survey of cooperatives rated it as highly unfair, because outsiders got a lot of it and because those who got vouchers early-on bid for the most desirable land in the first auction.

Successor enterprises and internal restructuring

After common property division, land privatization, and the choice of staying or exiting, the most important decision was on the new corporate ownership and internal organization structure of the agribusiness. Most collectives reorganized as Western-type cooperatives and asset shares became coop stocks. To pay off debt, coops sold some facilities, usually industrial sidelines, or leased them to entrepreneurs. All downsized their work force and farm less land. Some have created limited liability companies from operating units partly owned by the teams working there and partly owned by the coop. The agromanagers took the initiative in these decisions though coop members were of course informed and gave their consent. The crucial dimensions of these decisions were maintaining financial solvency and avoiding bankruptcy, increasing efficiency and profitability, creating ownership incentives for teams of producers, reducing tax liability, and in many places protecting the interests - the stock values - of the retired members and unskilled workers who were not rehired. In the socialist era the retired especially got a lot of income producing benefits (through the so-called household plots) and non-monetary benefits and services that were terminated (but not everywhere) in the new cooperatives for cost-saving reasons. Though the retireds now own some land which they rent and farm part-time, their livelihood is more precarious than before.
The highlights of these decisions are briefly described here.

a. Downsizing the workforce was universal. In a national sample of 104 coops Varga and Toth (1995, p.51) found that the average workforce declined from 377 to 142 in four years, and keeps shrinking. Although cropland also declined, the ratio of ha./worker doubled from 8.5 to 16. Mandated employment of collective members was one of the reasons for inefficiency and free riding in socialist agriculture. Many resented that shirkers, unreliable and incompetent workers, and alcoholics couldn't be gotten rid of. One respondent told me before the transformation: "If we were 100 workers instead of 220, we would do the same amount of work, perhaps even more."

b. Internal restructuring - under socialism, to create greater incentives for producing efficiently, some collectives had contracted production to small teams (e.g. the dairy workers) who could retain profits beyond contract fulfillment, and had "outsourced" labor intensive tasks (e.g. raising piglets) with a buyback contract (price per kg.) in which risks were shared (e.g. piglet mortality). New cooperatives increased these practices and added an ownership component. A team bidding for a production facility (dairy) would incorporate as a limited liability company. Team members would have to invest new money by buying shares, but could buy additional shares by paying the coop with their coop stock. The team and the coop would thus both become part owners of the facility. If teams created several production companies, the coop became a finance and service provider with investments in its production companies, with coop directors on the company boards and production managers on the coop board. The innovation was that each company retained a part of the profits it generated, and that poor performance by some had low external effects on others. At the same time, a moderate amount of interdependence reduced the risk for all.

It appears possible to model team selection and formation, including team size and composition, with club theory. In our research, unreliable and incompetent workers, excessive drinkers, as one would expect, were excluded, and a proper mix of managers, technicians and unskilled workers assembled according to human capital criteria. Kinship also entered into team selection. We haven't analyzed our micro-level enterprise data yet for me to pursue this line of analysis.
c. Some abuses have occurred, many in connection with failing enterprises. The most common was for the coop management and some confederates to salvage a profitable chunk, incorporate it, transfer assets to it below market value internal pricing, purchase the new stock with coop shares, and let the coop slide into bankruptcy. Thus a clique would salvage its jobs and valuable assets for itself, and leave the rest of the members, most notably the retireds, with worthless coop shares, or as one respondent put it, "empty buildings and ashtrays." The theory of coalitions and alliances might be used here. It was very necessary to include the chief accountant in the clique, and make deals with some others who might blow the whistle. Some unskilled workers whose support was needed but whose shares would become worthless could be promised continued jobs, and threatened with job loss if they didn't cooperate. In a handful of cases that I had a chance to study, informants made accusations that I was unable to check, and others were reluctant to talk, understandably.

d. Bankruptcy - in some coops (and earlier collectives), the debt had accumulated to such an extent that bankruptcy was inevitable. In some cases, the farmers played a game against creditors, and ultimately the state. They would continue to draw wages while the debt increased, then went into bankruptcy, and bought up coop assets (like farm machinery) at local bankruptcy auctions at below their market value for cash, because used farm equipment would attract few buyers from outside the locality, and non-movable assets were worthless to outsiders. As well, the creditors (banks, suppliers) did not object because they in turn got the state to take-over about half the uncollected debt. The ultimate losers were the public at large who suffer cutbacks in state benefits and services due to the high and mounting national debt. Meanwhile the farmers would continue farming their small family plots and apply for a start-up loan or grant to the government for a new start in cooperative or corporate farming.

It is my impression that such a game tended to be played more out of desperation than malice. The more usual course to fend off liquidation was selling assets and downsizing, cutting real wages, reducing fertilizer and other inputs, paying no dividends on shares, and other drastic cost-saving measures.
Conclusion

I want to highlight two issues important for rational choice theory. 1. Are rational choice models we routinely use adequate for analyzing, at the micro level, a complex process such as the change from socialist collective farms to capitalist farm enterprises? 2. Does a micro-level understanding of such a process provide an adequate understanding of how a socialist economy is changed into a market economy?

1. At the micro-level, the change can be broken down into interrelated, sequential choices, by individuals and groups, starting with the decision to split a large collective farm into smaller village units and ending with the internal restructuring of the successor farm enterprises in the new market economy. I hope I have made a persuasive case for it with my models, however primitive, of social dilemma in the exit/stayer choice, of the comparative statics of choice for common property division, and suggestions elsewhere. But let me add two qualifications.

In our research, we found great variance of choices, dispositions, resources, among actors. The dynamics of a model are provided not so much by the typical and average actor but precisely by the diversity among them. That is not unusual. In models of collective action for protest participation and opposition, it is heterogeneity that creates the most interesting dynamics (Oberschall, 1994), and so it is in the present instances.

Distributive justice and morality enter decisions, and should not be ignored. I have shown in the common property division how justice variables can be entered and dealt with in rational choice. Although I did not pursue this topic here, a moral variable does not have to be made into an exogenous variable, and it can be measured. According to an argument I have developed elsewhere (Oberschall, 1995), a disposition for justice is positively related to the experience of interdependent work where one’s accomplishments and rewards depend on the cooperation of others. It is possible to operationalize this conception in terms of work routines and organizational characteristics. Call it a Durkheimian hypothesis about moral sensibility. I am not claiming that this is all there is to fairness, but it is a start. In my model this still leaves open the question of what mix or division of needs and contribution is believed just (the location of the justice production function along q in the figures) though some
research has been done on income distributions and could be used to construct an empirically supported, reasonable framework which is not arbitrary.

2. On successfully understanding a complex macro-process such as the transition from socialism to a market economy by modeling only at the micro-level of enterprises, assemblies and individual actors I have many doubts. First, the actors operate in a highly uncertain economic and political environment. They also lack much information, and work with faulty information. They have cognitive liabilities, not just limitations, what Douglass North (1990, p.17) referred to as "cognitive systems that do not provide a true model of the worlds about which they have to make choices". Though actors make rational choices from their vantage point, they may have ruinous consequences for individuals and groups, leading to organizations and institutions that are not efficient, unwanted, yet resistant to change. Also, social change is path-dependent; poor choices set in train other poor choices which create stable equilibria for inefficient institutions. In Hungarian agriculture something like this occurred when the production and marketing ties between collective farms, the food industry, and small family farms fell apart, to the detriment of all three parties, and is only slowly and painfully being reestablished, with uncertain results. One consequence: a country that used to export 30% of its agricultural output imported some crops and food in the early 1990's which it used to produce in abundance and export for decades (if not centuries).

The whole political-economy of agriculture is a system that has system properties (e.g. the linkages of small producers, large producers, and food industry above) which cannot be derived and explained from the inner workings of its component parts, or subsystems. The whole system has to be modeled. In the "Architecture of Complexity", Herbert Simon (1969) made this point elegantly and provided analytic tools for getting started. Jim Coleman always emphasized that rational choice theory has got to go from micro to macro, but we cannot get to macro if we don't directly study the macro properties of systems.
Bibliography


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