Democratic Institutions and Economic Reform: the Polish Case

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Abstract

Analysis of the economic transformation of the Polish economy and of the 1993 elections for Parliament suggest that it is possible to proceed withpro-market and democratic reforms simultaneously. As demonstrated by the Polish case, the key to this process is the rate at which new enterprises are created. These enterprises, not the privatization of existing ones, are responsible for the creation of a private economy. This evolving new economy based on firm creation and growth creates a pro-reform constituency in the regions where it is occurring. This constituency provides strong support for pro-reform parties. The Polish case also illustrates how electoral rules and their interaction with the evolution of pro-reform constituencies affect the repesentation of pro-reform interests. The Polish case offers important lessons about the reform process and about the way scholars conceptualize political-economic processes.

A lively debate persists about the ability of democratic regimes to initiate and pursue dramatic economic reforms, such as required by the shift from a centrally planned socialist to a free market capitalist economy. The quick caricature of the reasoning is that reforms impose very high costs on existing, politically powerful sectors, who will then oppose and eventually frustrate reform. This process is even more fragile if the country is simultaneously trying to create and consolidate stable and legitimate democratic institutions. The democratic dilemma is that the more open the political process, a major aim of democratic reforms, the more susceptible the process is to the claims and demands of those organized sectors that are losing economically and possibly politically as a result of the economic reforms. (Elster, 1993, has probably the strongest argument that these goals are incompatible, but also see Sachs, 1992, Nelson, 1993 and Chan, 1995.) This description paints a very pessimistic picture that has led some writers to suggest that for economic reforms to be successful there must either be a relatively authoritarian political system or the political leaders must have a substantial degree of autonomy, such as given to many central banks. By this reasoning, a transitional country must forego either economic or democratic reforms.

As compelling as this logic is, there are important empirical examples to make us believe this is too simple an approach. After all, we see direct evidence of countries, such as Poland and the Czech Republic, that are struggling, but with notable success, to achieve both democracy and capitalism. (See Mueller, 1996.) Obviously, there must be forces at work in this process that support the reforms and that at a minimum are able to oppose those who wish to stop and even undo the reforms. We argue that the economic reform process itself, if successful, creates its own constituency for continued reform, counterbalancing the opposing forces. The ability of this constituency to continue the pressure for reforms is then a function of the political institutions that determine the influence of constituencies of different sizes and geographic locations.

The core of our analysis is that new economic entities and political interests are endogenous to the reform process. This endogeneity makes a priori analyses and predictions about the direction

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and ultimate configuration of economic and political interests uncertain at best and very likely systematically misleading, as too much weight is according to existing organizations and to their interests and influence. This endogeneity of interests also makes the analysis of and choice among rules for new democratic institutions very difficult. Rules that appear fair in accomplishing some desired ends, such as balancing between proportional representation and having too many parties, given the initial conditions may ultimately advantage or disadvantage constituencies that will evolve from the reform process itself.

The arguments are quite straightforward. The basic assumption is that if successful the economic reforms will increase efficiency and stimulate growth. The contention that democracies cannot sustain these reforms is that the changes that improve efficiency will eliminate jobs and reduce the real income of many workers in existing enterprises. Furthermore, actions needed to balance the budget, to reduce inflation, and to stimulate private investment result in decreased subsidies and transfer payments. The consequences of these actions further add to the constituencies that will oppose further reform and even try to reverse the reforms in place. Since these constituencies are very identifiable and in most cases already highly organized and mobilized, the prediction is that they will pressure the government either directly through elections or indirectly through lobbying, demonstration, or even riots to halt or even reverse the reforms. We contend that if the economic reforms are in fact efficiency enhancing, as claimed, aggregate real income will increase and real growth will occur, making some sets of individuals, organizations, and regions better off as they adapt to the new rules and succeed in the "new" economy. These entities then become a constituency that will support the reforms and push for their continuation and expansion.

The ex ante difficulty with our claim is that until the reforms are in place *and* until people have a chance to alter their behavior to take become successful under the new rules, the pro-reform constituency is an invisible one. This circumstance is particularly true in the case of countries making the transformation from a planned to a market economy, as most of the new economy will arise in the form of new private enterprises, not from the restructuring of existing ones. (On this point see Kornai, 1990, and Murrell, 1992.) And, these firms do not exist at the initiation of the reforms and their existence, location, size, and influence at some future point are very uncertain, problematic, and difficult to predict. If the reforms are successful, much of the growth in income will come from these ex ante non-existent firms, the workers they will employ, and their impact on the local economies where they are located.

A static analysis of reform that treats economics and politics as related but separable processes will not foresee the evolution of the new economy and the new political constituencies. When the economic and political reforms are introduced one very predictable constituency is the people most likely to suffer from the reforms as inefficient, sheltered enterprises are subject to fierce new foreign and domestic competition and as government subsidies and transfer payments are reduced. These interests, such as worker organizations and factory managers cum party members, are well organized and likely to have considerable access to government decisions. By contrast, the constituents for the new economy, as well as the new economy itself, not only do not exist prior to the beginning of the reforms, but they are impossible to identify and even harder to contemplate organizing. Consequently, most analyses led to pessimistic views about the political process, which often then

led to recommendations for semi-authoritarian regimes that are highly insulated from popular democratic forces.

We contend that as reform proceeds, the individuals, organizations and regions that are successfully adapting and that are now becoming better off economically are an emerging constituency for continuing reforms. There are other benefits to the introduction of a market economy, such as the availability of goods and the shift to a demand rather than a production driven economy, which will encourage support for continuing the reforms. In political terms, however, these benefits are relatively impotent. The advantages of these benefits are closely tied to people's ability to rapidly raise their income in order to enjoy these new and more available goods and services, which also come with a much higher price tag.

The second part of our argument is that the rules governing the new political institutions will play an important role in determining the relative influence of this evolving pro-reform constituency. All the countries pursuing pro-democratic political reforms have debated, experimented with, and ultimately adopted different set of rules for regulating their political parties and elections, for allocating legislative seats, for choosing an executive, and for structuring power and conflict among parliament, the executive, the bureaucracy and the courts. In many cases debate over these rules concerned the balancing of interests associated with the reform and anti-reform constituencies, the attempt to provide broad and equal representation while developing stable parliamentary majorities, and to facilitate strong leadership without it becoming authoritarian. These rules will affect the ability of pro-reform organizations and parties to continue the reform process and of the anti-reform interests to slow, stop or even reverse them. This is obviously not a novel argument. What we contend is novel is that any analysis of these rules or predictions about who will be advantaged or disadvantaged will be made very difficult and possibly even perverse because of the endogenous and evolutionary process by which these new economic organizations and the associated political interests will emerge.

This paper develops this brief argument empirically based on the Polish experience. Data describing the transformation of the Polish economy between 1990 and 1993 in each voivodship are used to measure and analyze the amount and type of economic change at that level. These measures of economic change are then related to the distribution of votes for the major parties in the 1993 parliamentary elections to suggest the connection between the rate of transformation to the new economy and votes for the reform party, as well as the expected connection between the high costs of the economic reform and votes for the post-Communist parties questioning the reforms. The first part of the paper presents a detailed analysis of the transformation of the Polish economy based on special data prepared by the Polish Central Statistical Office (Główny Urząd Statystyczny) that measures both the decline of the traditional economy and the creation of new private enterprises among the 49 voivodships. This is followed by a discussion of the political issues and the platforms of the contending parties in the 1993 election. Much of the focus in this election concerned the direction and pace of future economic reforms, with the major parties staking out distinctly different positions on these issues. This discussion lays out the propositions relating the measures of economic performance to the votes for each party, which is the core of the test of our basic proposition about the dynamics and endogeneity of political and economic forces. We then

discuss the particular set of electoral and representational rules that Poland adopted just prior to the 1993 elections.

We show how they disadvantaged the pro-reform party, despite the fact that this was the party that adopted the rules in the first place. The paper concludes with some arguments about the types and pace of economic and political reforms that are likely to produce long term stability.

The Transformation of the Polish Economy

The data describing the transformation of the Polish Economy measure the annual employment of all enterprises with five or more employees that operated in Poland (and who reported their operations to the Central Statistical Office) during the period 1990-94. These data allow us to count the number of growing and declining, including failed, firms over this period, and the number of jobs gained or lost by these firms. The data also count the number of new firms begun each year, the number of these firms that survived in subsequent years, and their annual employment. Enterprises are identified by type of ownership, industrial sector, and region so that the changes occurring in each voivodship can be assessed.[1] These data, and the analyses they permit, provide a detailed and very informative picture of the economic changes occurring in each region in Poland.

(Table 1 About Here.)

These data show a picture of two strikingly different economies coexisting within each voivodship, though in dramatically different proportions when compared across regions. These contrasts are easy to see in national terms. Table 1 shows a summary of employment changes between 1990 and 1994, by ownership type. (See Jackson, et. al., 1995, for an extended discussion of the transitions in the Polish economy.) The economy in 1990 was dominated by large state-owned and collective enterprises (large is defined as enterprises employing over 100 people). Among the workers identified in our data, 88.4% were employed in these organizations in 1990, while another 5.3% worked in small state-owned and collective enterprises. By 1994, the proportion employed in the state-owned and collective sectors had declined to about 72%, producing the extensive unemployment and accompanying social distress predicted by all but the most die hard and ideologically driven free market economists. For example, public enterprises employed 7.0 million workers in 1990, 6.6 million of whom were in large enterprises. By 1994, only 3.8 million people were employed in these same enterprises, a quarter million of whom were in fully private firms.

Privatization of these public enterprises proved to be more difficult, and proceeded more slowly, than anticipated by many advisors and policy makers. In further contrast with the optimistic predictions of some individuals, even those firms that were privatized did not fare all that well in a competitive economy. Our data show 731 firms that were privatized in this period, and these firms lost a net of 132,000 jobs, or 35% of their 1990 employment, after being privatized. In addition, 5922 state-owned firms underwent some form of ownership change and reorganization during this period.

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[1] The data exclude people employed on farms and in government organizations.

Though formally still in the public sector, these firms were an integral part of the restructuring process. Among these restructured firms, 3357 remained in 1994 and their employment dropped by over 400,000 jobs, or by 36%. If these changes were the result of shedding underemployment and if they lead to increased efficiencies, then these firms have the possibility of contributing to job growth in the future. But, these gains even if they materialize, are likely to be a small part of overall job creation.

The decline of this old economy is only part of the story. Between 1991 and 1994 we counted 40,597 new private firms, both domestically and foreign owned, of which 26,694 remained in 1994, employing 912,000 people. In addition, there were 13,587 small, domestically owned private firms in 1990, the majority of which were surely founded as part of the economic transformation begun in 1989. In 1994, 3,841 of these firms remained and employed 123,000 workers. It is necessary to keep in mind that our data understate the amount of new enterprise creation occurring in Poland. The government data used here explicitly exclude firms with fewer than five employees and implicitly omit firms that do not report, both of which constitute growing aspects of the Polish economy. Thus, it seems fair to conclude that new firm creation and the growth of small and medium sized enterprises constitutes a very substantial part of the privatization and growth of the Polish economy.

This combination of decline and creation is leading to a dramatic restructuring of the Polish economy and a rapid increase in the proportion of workers employed in the private sector, and an accompanying decrease in employment in the state-owned and collective sectors. What is more significant from our perspective is that these processes of decline and creation create two vastly different economies.[2]

These two processes did not take occur evenly throughout Poland. Some regions proved to be much more successful at adapting to and at taking advantage of the economic opportunities offered by the move to a capitalist economy. For example the ratio of jobs in 1993 in new private firms, both domestically and foreign owned, per hundred population shows considerable variation among voivodships. These ratios ranged from under one in Lomza (.8) and Tarnobrzeg (.9) in southeastern Poland to over four in Warsaw (5.3) and Bielsko-Biała (4.0) in far southern Poland. The national proportion was 2.3.

There are several important explanations for these variations among voivodships, and these explanations have important implications for the development and location of pro-reform constituencies and for the consequences of alternative electoral rules. Our model of these variations tests two important propositions. The first relates the creation of the new economy to the dominance of the old and to the size of the voivodship, as measured by its population density and total population in 1993. The second proposition examines the magnitude of any contagion or agglomeration effects. This proposition says that the probability of the birth of a new firm is a

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[2]It is important to note that our data measure something quite different than simply the proportion of the local economy that is in the private sector. Such a measure for Poland does not measure the size of what we call the new economy because it includes agricultural production. Agriculture in much of Poland remained in private hands, yet this sector needs to modernize and has suffered substantially from the transition to a market economy. Thus a simple measure of private employment or production does not capture the important changes that we do with our data.

function of the number of existing firms and that the growth of new firms will be related to the relative number and size of similar firms in the region. The proposition is based on the existence of regional economies of scale, or externalities, whereby new firms starting in any area with a large number of similar firms are advantaged over firms starting in areas without such a concentration, independent of any exogenously given factors, such as cost differences. (See Arthur, et. al., 1987, for a simple model of this process and Arthur, 1990, Krugman, 1991, and Jackson and Thomas, 1995, for empirical support.)

The contagion proposition is particularly important in terms of generating political constituencies. Significant contagion effects imply that the new economy will grow most rapidly in any area that can effectively initiate the process, and that expansion is most likely in immediately adjacent areas. The smaller the pockets of new activity initially, the more concentrated will be the growth of new economic activity. Furthermore, it is unlikely that new enterprises will develop and prosper in anything even remotely resembling a uniform distribution across the country. If this proposition describes the Polish case and that of other transitional societies then the emerging pro-reform constituencies will be highly concentrated and quite localized.

These propositions about the regional variations in the development and growth of the new economy are tested within a structural equation model describing the variations among voivodships in seven different aspects of the new economy: the number of small private firms per capita in 1990;[3] the average employment per firm in these firms; the survival rate among these firms between 1990 and 1994; the average employment in these surviving firms; the number of firms started between 1991 and 1994 per capita; the survival rate of these firms; and the average size of the firms surviving in 1994. There are three key equations in this model with respect to the propositions just outlined. The first is an equation that models a voivodeship's comparative advantage in starting and growing new firms, denoted by *Comp Adv*. The second and third describe the number of small private firms per capita in 1990 and the birth rate of new firms per capita between 1991 and 1994, respectively. We expect to see considerable variation among regions in their comparative advantage in competing in the new economy, which will then help explain the regional variations in the evolution of a pro-reform constituency. The test of the contagion hypothesis is whether the expansion of the private economy between 1991 and 1994 is related to its size 1990, even after we have accounted for variations in comparative advantage.

Competitive advantage is a function of the proportion of the voivodship employed in farming, the proportion of the 1990 work force employed in large state-owned enterprises, the log of population density and the square of the log of density.[4] Our expectation is that the number of new private firms will be negatively related to the proportions in farming and in large state-owned enterprises, as these are very direct remnants of the old economy in Poland and very likely to be resistant to the methods and attitudes that are central to the new economy. The log of density is included in

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[3]Small firms are defined as those with fewer than 100 hundred employees in 1990. Population is measured in thousands of people.

[4]The log form is used to convert a very skewed distribution to one that is more symmetric, preventing this variable from simply being a proxy for Lódz, Warsaw and Katowice.

quadratic form with the expectation that at both low and very high densities there will be less new firm creation and growth. At low density levels, there will not be a large enough market to support many new firms, as most firms at this stage will be quite local in character. As densities increase, so does the size of the market and the ability to serve it more cheaply. At the larger density levels, however, various costs begin to increase, making it more expensive to start and expand new enterprises. The quadratic form will capture these two effects, if present. The population variable is included in each equation to account for any remaining size effects. All variables are in log form, so the coefficients can be interpreted as elasticities. Observations are weighted by population to correct for expected heteroskedasticity problems.

The estimated equations that are central to our discussion are shown in eqs 1 to 3. (The complete model and statistical results are presented in Appendix B.) F_{90} indicates the number of small private firms existing in 1990 while F_{94} refers to the number of firms started between 1991 and 1994.

$$
\begin{aligned}
Comp\ Adv\ =\ & -.29\ \log(\%Farm)\ -(.83\ -.96\ D_{94})\ \log(\%Lrg\ SOE) \\
& \quad (.06) \qquad\qquad (0.30)\ \ (.42) \\
& +.20\ \log(Density)\ -.18\ [\log(Density)]^2 \\
& \quad (.06) \qquad\qquad\quad (.04)
\end{aligned}
\tag{1}
$$

$$
\log(F_{90}/Pop)\ =\ .71 + 1.0 * Comp\ Adv\ +.19\ \log(Pop)
\tag{2}
$$
$$
\qquad\qquad\qquad\qquad\qquad\qquad\qquad (.10)
$$

$$
\log(F_{94}/Pop)\ =\ .49 + 1.0 * Comp\ Adv\ -.13\ \log(Pop)\ +.50\ \log(F_{90}/Pop)
\tag{3}
$$
$$
\qquad\qquad\qquad\qquad\qquad\qquad\qquad (.08) \qquad\qquad (.09)
$$

Each voivodship's comparative advantage (or disadvantage) in creating and growing new enterprises was strongly and negatively related to the dominance of the old economy. In 1990 areas dominated by employment in large state-owned enterprises and those heavily dependent on farming were substantially less likely to develop new firms. A 1% difference in the proportion of employment in large state-owned enterprises is associated with decreases of .8% in the number of private firms. This relationship disappeared after 1990, implying that the large state-owned enterprises did not cast a shadow over new enterprise formation after the initial year of the transformation. By contrast, each 1% difference in the proportion in farming is associated with decreases of about .3% in the number of private firms, and this relationship continued through 1994.

The second set of factors affecting the creation of a new economy is the population density of the voivodship. The association between firm creation and growth and density followed a quadratic pattern, with areas slightly above the mean density having the most success. The coefficients indicate that creation and growth peak at a density of 175 people per square km. The population density for the country is 123 people/km², the three densest voivodships have densities of about 600 people/km² or more while several, such as Poznań and Wrocław closely approximate this peak.

The contagion proposition is strongly supported by the results. Each one percent increase in the number of small private firms existing in 1990 is associated with a half percent increase in the number of firms created between 1991 and 1994. Lastly, there is mixed evidence about any economies of scale in total population. Controlling for density, each one percent increase in voivodships' population is associated with about a two-tenths of a percent increase in the number of new firms per capita in 1990. Between 1991 and 1994, however, this relationship was about the same magnitude, but negative.

These results are consistent with U. S. findings that show the growth of employment in new firms at the state level was negatively related to density and positively related to the number of independent firms in the state. (See Jackson and Thomas, 1995.) From the Polish standpoint, our results mean that the most successful voivodships are ones that are slightly above average in density with a large non-agricultural economic base. There is also clear support for the agglomeration hypothesis, in that areas with a large number of private firms are the most successful at generating new and growing firms. We suspect this agglomeration process is even more localized than our analysis suggests. A voivodship is too large a geographic area to observe the most intense effects of a concentration of new private activity. Nowak, et. al. (1994) show that employment in new private activity is even more highly concentrated when observed at the gmina level.

The importance of having successful and growing new enterprises extends beyond their direct employment to the locale as whole. The income created by these growing firms is spent and respent in the local economy generating a multiplier effect, lifting more than just those directly employed. Increasing concentrations of new and successful firms also generate an environment that stimulates and supports further entrepreneurial activity. We contend that it is the creation of this environment, not just the new firms themselves, that is critical to a successful transition to a market economy and for the creation of pro-reform political interests.

These new firms, and the entrepreneurial environment associated with them, constitute an invisible economy at the time the reforms were started in 1989-90. They were invisible in the direct sense of not existing, but they were also invisible in that most of the discussion of the transformation ignored them altogether, predicting neither their size nor location, and focused on efforts to restructure existing firms. From a political standpoint, these new enterprises were also invisible in that there was no constituency to represent them or their interests. And, political forecasts about the formation of future interests and pressures ignored their future presence just as did the economic forecasters. Once these firms begin to form, survive and grow they create a political dynamic advocating a continuation of the reform process just as they create an economic dynamic from the agglomeration process. In fact, our contention is that these dynamics are closely connected and form a true political economy of reform.

From a political participation standpoint, it is not necessary that these new firms, the people they employ, or even residents in their locale formally band together to create a political organization. In fact, following Olson, we expect that the creation of such a formal organization is exceptionally difficult, and we might expect it to be doubly so among a group of small, dispersed, individual entrepreneurs. What is sufficient is that there exist either or both informal organizations as well as a political party or organization that can articulate and advocate these interests in

continuing or promoting reform. In the Polish case, as in most of the recent transformations, such a political organization exists in the form of the party, organization, and individuals who constitute the incumbent reform government. One major political theme then becomes a contest between the efforts of the individuals and organizations who are suffering under the reforms to mobilize and develop electorally viable organizations and the efforts of the incumbent reform party to hold a constituency who support the reform. In the traditional ex ante analysis, this latter group of course does not exist while in our model it is an emergent endogenous constituency.

The Case of the Polish 1993 Parliamentary Elections

The Polish Parliamentary elections in September, 1993 permit a relevant test of the propositions just outlined. The Polish economic reforms, begun in 1989 and often referred to as shock therapy, are the most radical and severe among the East Central European countries making the transition to democracy and a market economy. (See Sachs, 1992, and Lipton and Sachs, 1990.) These reforms were quickly followed by extensive unemployment and a very high level of inflation in the early 1990's as well as by one of the highest levels of GDP growth in Europe in 1993 (and 1994). (See Unger, 1994, for an excellent summary of both the success and the problems.)

These consequences led to intense debate, demonstrations, and strikes and to active opposition by parties contending the reforms were proceeding too fast and had possibly gone too far. The party most responsible for the economic reforms, the Democratic Union (UD), went through a series of leadership changes, never quite being able to find a stable government. The last version, headed by Hanna Suchocka, was toppled in May, 1993 by a coalition of opposition parties opposed to the reforms. This led directly to the elections in September, 1993. Analysis of these election returns provides a test of the proposition about the political interests created by the new economy.

We begin with a brief description of the positions of the three major parties – the Left Democratic Alliance (SLD), the Polish Peasants Party (PSL), and the Democratic Union (UD). These were the most visible parties, they received the largest number of votes, and they offered voters contrasting positions on economic reform. Support for each should be a reliable indicator of reform sentiment in any region. The data just analyzed provide a unique and vital estimate of the number of jobs created in new private enterprises since 1990, thus allowing an assessment of the strength of the new economy in each voting area.

The Political Choices

We focus our analysis on the three major parties, of the more than 25 parties who competed in the Parliamentary elections in 1993. These three were the most visible and the most identified with the debate over the economic reforms. The positions of each party can be fairly easily summarized.

Democratic Union - UD This was the incumbent party and in one form or the other, had been since the fall of the Communist party. The stringent economic reforms, initially referred to as the Balcerowicz Plan after the first Finance Minister, were most strongly associated with the

Democratic Union. The UD is most strongly identified with efforts to continue the reforms at their previous pace, despite the unemployment and reduction in social spending.

Democratic Left Alliance - SLD This is one of the parties headed primarily by former Communist party members, and is frequently referred to as a post-communist party. It is a coalition of 28 parties and political groups. They did not oppose the economic reforms outright, but said the pace of privatization needed to be slowed, that government social spending should be increased even if that meant a larger deficit, and that wages should be increased. It should be noted that many of the SLD leaders had used their positions and connections to become successful economic entrepreneurs under the new system, thus substituting one form of privilege for another.

Polish Peasants Party - PSL This is also one of the post-communist parties, but with a very rural base, as the name implies. They took a more antagonistic approach to the economic reforms than did the leaders of the SLD. They advocated larger government subsidies and protection for agriculture and state-owned enterprises, were less concerned about increasing the government deficit, and were opposed to much of the privatization plan.

These very brief descriptions of the choices permit us to pose the appropriate hypotheses about the expected vote patterns. The UD should be strongest in the areas making the most successful transition to the new economy, and possibly experiencing the least dislocation from the reforms. It is important to separate these two factors, however, as some regions are likely to be experiencing both success in starting new ventures and serious layoffs from large state-owned enterprises. Kraków, with its very large Soviet installed steel mills at Nowa Huta, or Gdańsk, with its massive shipyards, are examples of this possibility.

The PSL's votes should come from the rural areas and those experiencing economic difficulty. The transition was particularly hard on farm areas, as Polish agriculture is quite inefficient despite being largely private. The opening of international markets meant much greater competition which combined with the high level of inflation to dramatically decrease real incomes in agriculture. The PSL promised to maintain or increase subsidies and to maintain agriculture in its current state rather than force modernization, which would have further harmed rural areas economically, at least in the short run.

Though a broad coalition party, the SLD's support base is expected to be in the more urbanized areas experiencing large economic declines in the large state-owned enterprises. It is likely that areas with large state-owned firms will also support the SLD, even if they have not experienced large declines, for two reasons. Voters in these areas may well, and rationally, anticipate the layoffs to come if the privatization program continues. In addition, these areas may contain large traditional industrial unions, who increasingly were opposing the strict economic reforms and some of whose leaders supported the SLD. If such unions were present and if they openly campaigned against reforms and for the SLD, it would increase the SLD vote in such areas.[5]

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[5]Unions in Poland at that time were in some organizational disarray. Those closest to Solidarity still found it difficult to support a post-Communist party while the OPZZ was part of the SLD coalition.

Though not one of the three major parties, the votes for the Labor Union (UP or Unia Pracy) are also included in the analysis. The pattern of support for the UP offers a further test of our propositions about the roles of the new and old economies in the election. The UP was a post-Solidarity party, thus sharing the anti-Communist views of the UD and other reform parties. Its economic policies, however, contrasted sharply with the UD. Party leaders argued strongly against the "neoliberal dogmas" of the incumbents (see Chan, 1995, p. 132) and UP deputies in the previous Sejm had voted against the budget and privatisation bills. The expectation about the 1993 election is that the economic variables will provide the strongest means for differentiating support for the UP from that for the UD. Areas with high unemployment and large state-owned enterprises will provide greater support for the UP while areas successfully creating new enterprises will be less likely to vote for the UP. Because of the shared Solidarity background with the UD, other variables will likely provide relatively little discrimination between the patterns of support for these two parties.

Data and Measures

The data on party support are quite straightforward. The election returns are available by voivodship (province). The support for each party is measured as its proportion of the total vote cast in the voivodship. The economic data were described in the previous section. Our measure of the success of the transition to the market economy is the number of jobs in private firms (domestic and foreign) in 1993 as a proportion of the 1993 population.[6] We expect that support for the UD relative to the non-reform parties should be positively related to this variable.

The unemployment rate is the basic retrospective measure of economic performance, and our expectation is that the higher the unemployment rate the lower the vote for the incumbent Democratic Union party and the higher the vote for the Democratic Left Alliance, the Labor Union and possibly for the Polish Peasants Party. The proportion of the 1993 non-agricultural work force employed in the remaining large state-owned enterprises is included to measure the size of political opposition to reforms based on the potential for future job losses. If reforms and privatisation continued, employment in these enterprises is also threatened, though it would not appear in the unemployment variable. The proposition is that the larger this ratio, the more powerful the opposition is likely to be, and hence the less support for the UD and the larger the support for the opposition parties, particularly the SLD and the UP. Lastly, a measure of GNP per capita is included to incorporate the proposition that voting might follow a traditional economic pattern. According to this proposition support for the UD should be higher in higher income areas as it is the more economically and socially conservative party in traditional Western European terms.

Other variables are included in the analysis to capture other facets of the election. The first two are the proportion of the population classed as working on farms and this variable times the

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[6]Specifically, since the elections were held in the fall, 1993 we use the 1993 employment of all private firms born between 1991 and 1993 plus the 1993 employment of private firms with one hundred or fewer employees existing in 1990 rather than the 1994 data used in Tbl 1 and eqs. 1 to 3.

proportion of farmland classified as traditionally private. The expectation is that the support for the PSL will be higher in rural areas, as represented by a high proportion of people employed on farms. This variable also captures important opposition to the reforms, as farmers suffered substantially from the reforms and were faced with the need for a large restructuring if reforms proceeded. To the extent that voting in rural areas was motivated by views on the reforms, the SLD should fare better than the UD in these areas, though not as well as the PSL. The interaction term with private ownership incorporates the expectation that voting patterns likely differ in areas dominated by private as opposed to state run or collective farms. The dominance of the two post-communist parties, and particularly the PSL, is likely to be largest in the areas with a history of a large state run farming sector and decline as the proportion of private farming increases. Given their urban bases, the farm variables are not expected to provide much discrimination between support for the UD and the UP.

An additional important factor in recent Polish elections has been a debate about the role and actions of the Catholic church. Powers and Cox (1997) for example conclude the religiosity played a major role in individual decisions in the 1993 election. There have been notable debates about the role the Catholic church should play in setting national policy and whether there should be religious education in the public schools, which would have been organized and taught by representatives of the Catholic church. A second, but related issue, was the question of abortion policy. Again, the Catholic church took a very strong stand against any liberal abortion policy. The SLD took the strongest and clearest pro-abortion and anti-church positions among the leading parties. The UD did not take a position as a party as there were strong divisions within the party on these issues. This heterogeneity and lack of a specific party position leaves the relationship between the church and support for the party more ambiguous. The church hierarchy also had a history of opposition to Communist, and post-Communist, leaders. Our expectation is that in areas where the church is strong there will be definite opposition to the SLD. There may also be support for the UD because of the presence of members within the party taking the pro-church position on abortion and its anti-Communist history. There may also be some opposition to the PSL in areas where the church is stronger because of the past associations with the Communist party and regime. There may be a negative relationship between the church and votes for the UP for the opposite reason. The UP was anti-Communist, but its delegates had supported the pro-abortion legislation. The strength of the church is assessed by a variable that is the number of priests per thousand population, as this should measure the church's organizational strength, not just the religiosity of the populace.

Dummy variables denoting the historical regional divisions of Poland between Russian, Austrian and German occupations are included. (The German region is the omitted category.) Tworzecki (1996) contends that the cultural and institutional legacies created by these occupations still play an important role in Polish politics, with the former Austrian region in particular being more conservative than the others and the Russian region being more socially radical. The expectation here is that support for the UD will be greater in the Austrian and lower in the Russian regions than might otherwise be expected given the values of current economic and church variables.

Lastly, variables indicating the home voivodship of the parties' major candidate is included, with the expectation of a significant coattails effect, with the prominence of the leader aiding the

party totals. These variables are one for Poznań in the UD equation (the home of Hanna Suchocka), one for Płock in the PSL equation (the home of Waldemar Pawlak), and one for Włocławek in the SLD equation (Aleksander Kwaśniewski's home and political base, even though he ran in one of the Warsaw districts).

The statistical model consists of four separate equations, each relating the set of explanatory variables to the log of the proportion of the votes for the SLD (V_{sld}), for the PSL (V_{psl}), for the UP (V_{up}), and for all other parties (V_{oth}) divided by the proportion of the votes for the UD (V_{ud}). For example, the first equation is $log(V_{sld}/V_{ud}) = XB_{sld} + U_{sld}$. (See Appendix B for a full description of the model.) This specification incorporates the constraint that the proportion of all votes in a voivodship must sum to 1, $V_{ud} + V_{sld} + V_{psl} + V_{up} + V_{oth} = 1$. The coefficients denoted by B indicate how the votes for each party or for all other parties relative to the votes for the UD vary with X.[7] For example, our proposition about the new economy predicts that the coefficient on the variable measuring the jobs created in new firms should be negative in each equation and more strongly negative in the equations for the two post-Communist and UP parties, and conversely for the coefficients on the unemployment and state-owned enterprise variables.

Statistical Results

Table 2 shows the statistical model for the vote for each party relative to the vote for the Democratic Union. The most important results are the consistent fit between the coefficients on the economic variables and our propositions. There is a strong relationship between the rate of job creation in new private firms and the vote for the UD, as evidenced by the negative coefficients in all four equations, and specifically against the two post-Communist parties, as indicated by the larger magnitudes of the coefficients in those two equations. These results are consistent with our proposition that voters in the areas most successfully making the transition to the new economy become a constituency supporting economic reforms, and therefore more likely to vote for the UD and even less likely to vote for the post-Communist parties.

(Table 2 About Here.)

The level of unemployment was positively and strongly related to the vote shares for both post-Communist parties and the UP. The latter relationship was particularly strong. The concentration of 1993 employment in large state-owned enterprises was negatively related to the votes going to the UD, with the PSL and the UP being the biggest beneficiaries. The coefficients on the other variables in the model were as predicted or insignificant. The proportion of the voivodship's population employed in farming was very strongly associated with the votes for the PSL, though this association was weaker in areas dominated by private farming. In areas dominated by private farming, there was no association between farming and vote for the SLD relative to the UD. As

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[7]In precise terms, for a difference in X_k of $\Delta X_k = X_k^* - X_k$ the expected difference in the vote share for party j relative to the share for the UD is given by, $log(V_j^*/V_{ud}^*) - log(V_j/V_{ud}) = b_k \Delta X_k$.

the proportion of private farming declined, this association became more strongly positive, though never to the level of that observed with the votes for the PSL. Interestingly, and again as expected, there was no association between farming and votes for the UP, relative to the UD, and this was true regardless of ownership.

The strength of the local Catholic church was strongly and positively related to the votes for the UD relative to votes for the post-Communist parties and particularly so for the SLD, as expected. The variables representing the historical regional partitions were weakly related to voting, though in the expected manner. The UD did substantially better than the SLD and UP, the two labor type parties, in the former Austrian partition and worse in the former Russian occupied territories. The SLD in particular fared just the opposite. These results suggest some small residual historical effects but that the other variables in the model, both economic and social, capture the important variations one might associate with each region. Variations in local wealth, as measured by GNP per capita were only weakly and not significantly related to the parties' vote shares. This result suggests that votes did not divide strongly along economic lines between richer and poorer districts but on cleavages created by the economic transition.

To better picture the magnitudes of the economic effects we are observing, consider the electoral impact if there had been 300,000 more new jobs in the private sector over this period. Nationwide, this would have raised the ratio of new private jobs to 1993 population by a third, from 2.32% to 3.10%, and would have reduced the 1993 unemployment rate by about 1.7%, from 16.4% to 14.7%.[8] The expected electoral impacts of the job creation would be to increase the votes for the UD, decrease those for the SLD and PSL, and slightly increase the shares of the UP and the other minor parties. The expected vote shifts on a national basis associated with these economic changes are shown in Table 3. The net consequences would be an increase of the UD vote by 1.4% and decreases of .9% and 1.1% in the votes for the SLD and PSL respectively. The expected vote for the UP increases by a very modest .1% and the vote share for the remaining parties as a whole increases by .6%.

(Table 3 About Here.)

These may not seem like large shifts, but they translate into significant shifts in the number of seats allocated to each party, as shown in the right columns. We assumed that new job creation increased by a third in each voivodship, increasing the values of the new jobs variable and decreasing the unemployment rate by corresponding amounts. The statistical results presented in Table 2 were used to predict the parties' vote shares in each voivodship.[9] The electoral rules in place for

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[8]This is a substantial number of new jobs, but is useful for illustrative purposes. We also think such an increase would not have been impossible with a set of economic policies that promoted new and small business growth. When viewed in terms of the rates of birth, survival, and growth of new firms, such an increase in the number of new private jobs requires relatively modest, on the order of 8%, increases in these three rates over four years to produce this result. See Jackson, et. al., 1996.

[9]Additional equations were estimated for the two minor parties who got seats in the new Sejm, the KPN and the BBWR so we could predict their vote shares in each region.

translating votes to seats were then used in each voivodship to determine the overall makeup of the new parliament. (These allocation rules are discussed in the next section.) The result would have been a twelve seat gain for the UD, mostly at the expense of the SLD and the PSL. who were predicted to lose eight and three seats respectively. Such shifts would not have endangerd the majority held by the post-Communist parties, but would have accomplished two other things. It would have reduced the size of this majority and made it more susceptible to defection. These results would also have more clearly signaled the the growth of the new economy and its association with emerging political strength, which would have imposed even stronger constraints on how anti-reform the ruling coalition could act.

Representing Reform: Votes to Seats

In an open democracy, as Poland is building, the ability of a pro-reform constituency to provide electoral support for a pro-reform party is a critical but not sufficient condition to be able to influence policy. It is critical how the pro-reform votes are translated into pro-reform seats in the Parliament. This aspect of the electoral outcome is determined by the particular set of electoral rules governing the election and allocation of seats. In the 1993 election these rules greatly advantaged the post-communist parties at the expense of a possile coalition of pro-reform parties. The SLD received 37.2% of the seats and the PSL got 28.7% of the seats with only 20.4% and 15.4% of the vote respectively. Thus, the post-Communist anti-reform bloc received almost two-thirds of the seats in the new Sejm with only slightly more than a third of the votes. From this position, they dominated the content and direction of Polish policy betwen 1993 and 1997.

Three electoral rules are important here, two of which favored both the post-communists and the UD. The third substantially favored the post-communists at the expense of all other parties. (See Chan, 1995, for a longer discussion of all the electoral rules.) The first rule set minimum votes levels that parties (5%) and coalitions (8%) had to exceed in order to get any seats. The second rule set aside 69 of the 460 seats for a national list of candidates that were allocated proportionally among all parties receiving more than 7% of the national vote. These rules were created to favor large parties and to reduce the number of very small parties that had seats in the Sejm after the 1991 election. The net effect of these rules were that small parties that received 35% of the vote received no seats. These seats effectively went to the six major parties that received 65% of the vote. The top four parties received seats from the national list and together had 90.8% of the seats but only 53.4% of the popular vote. (Four seats went to German ethnic minority parties that received less than 1% of the vote but who were advantaged by rules for such parties.)

The third significant rule was that creating electoral districts and then for determining the allocation of seats within districts. Voting districts are identical to voivodships except in Warszawa and Katowice, which were divided into two and three districts respectively. To accomodate the high variance in population per voivodship districts held anywhere from 3 to 17 seats. The allocation of these seats to parties was to be based on the distribution of votes for each party within the district. Because of the discrete nature of legislative seats the smaller the district the more the seats proportion will differ from the vote proportions. The formula used for this allocation, called

the d'Hondt formula, strongly favors the most successful party within each voivodship, particularly in districts with a small number of seats.[10] (See Rae, 1971, for a general discussion of the d'Hondt rule and Konieczny, 1996, for a discussion of the consequences of this allocation rule for the Polish case in 1993.)

The advantage given to the post-communist parties by the division of the electorate into districts of different sizes and by the use of the d'Hondt rule to allocate seats each district is illustrated in the top section of Table 4. The top row shows a division of the vote that closely approximates the national vote shares received by each party receiving seats in the new Parliament. The following four rows show how this distribution of votes would produce an allocation of seats to each party in the smallest and the largest districts respectively. In the smallest district, the SLD would receive 2 seats, or 67% of the total while the UD with 10% of the vote got no seats. In the larger district, where seats could be allocated more proportionally, the SLD got 6 seats, or 35% of the total while the UD got 3 or 18% of the seats.

(Table 4 About Here.)

The direct consequence of the d'Hondt allocation system, in a situation with as many parties as were running in the Polish election, is to favor the party that receives the most votes, and the smaller the district the larger the advantage. The general bias towards the plurality winner favorsed the SLD while the bias associated with small districts strongly advantaged the PSL, with its electoral base in the small agricultural voivodships.

The second part of Table 4 illustrates the likely consequences of the votes to seats rules under three hypothetical alternative aggregation rules. The alternative labeled A combines three small rural voivodships in northeastern Poland into a single district with twelve seats. (55% of the workforce is employed in farming in this disrtict compared to 27% nationally.) The B alternative combines three relatively industrial but small voivodships in western Poland into a single district. (29% of the combined district workforce is employed in the industrial sector compared to 24% nationwide.) The last alternative considers the entire country as a single distict, as do some other countries using a proportional representation system. For each alternative, the row denoted as "Actual" is the distribution of seats by party under the actual district divisons. The row titled "Combined" shows the division of seats that would have occurred applying the d'Hondt rule with the actual votes cast in the 1993 election within the combined district. For the national district, the allocation of seats from the national list is the same as in the Actual outcome.

In the predominately rural combined district, the PSL would have two fewer seats while the UD and the UP would each gain a seat. In the more industrial unified district the SLD and the PSL would each have lost a seat with the UD and the KPN each gaining a seat. The point here

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[10] The d'Hondt method works as follows: let V_i and S_i be the total vote and number of seats for party i. Every party starts with $S_i = 0$. For each party, calculate $V_i/(S_i + 1)$. The party with the highest ratio gets the seat. The calculation is repeated till all seats are allocated, upping the appropriate S_i by one each time a party gets another seat.

is that the bias favoring the majority parties shown in the illustrative example has observable and direct consequences for the allocation of seats in the new parliament. We lack data to perform comparable disaggregations, dividing the larger districts such as Kraków, Poznań or Gdańsk, into smaller units where the UD or other reform parties might be favored. It is our expectation that the new private firms are not uniformly distributed within these voivodships, but are concentrated in smaller subregions. Separating these subregions into small districts where the UD did well would likely produce a comparable bias to that created by small homogenous rural districts for the PSL.

The treatment of the entire country as a single district poses an interesting alternative. The two post-communist parties, who would have lost a total of 42 seats, could still form a majority coalition, as they did in 1993. This coalition, however, would have been far smaller and thus more susceptible to defections than what actually transpired, which is what was intended. The three smallest parties, who would have gained the most seats, were strongly anti-communist though not necessarily pro-economic reform. The UP (workers union) was very anti-reform, the BBWR (a party organised by Wałęsa) was pro-reform, while the KPN was a rightest party then was generally anti-reform but economic policy was not its primary issue. This alternative rule for allocating seats would have produced a substantially different parliament, with important consequences for economic policy.

The issue here is not just a question of possible bias against the UD, but a broader question of whether electoral rules designed to strengthen larger, dominant parties pose a systematic barrier to pro-reform parties, such as but not specifically, the UD. Efforts to debate this question depend in large part on one's predictions about where the components of the new economy are likely to arise. and how the distribution of this activity interacts with the possible electoral rules.

Our analyses of the patterns of new firm creation and of the 1993 vote have implications for the development of electoral rules that are not biased against the reform parties and constituencies. If Poland's case is generalizable, as we think it may well be, these constituencies are most likely to develop in smaller areas that are already industrialized with a medium density level. Furthermore, the agglomeration hypothesis suggests that the growth of the new economy is likely to take place in fairly concentrated subareas within a region and to expand at the edge of these subareas. Taken together, these findings suggest that support for reform parties is likely to be located as pockets in more heterogeneous areas, where they may be an important but still minority party. In this case, some form of representation among smaller districts would level the playing field.

At some point, constitution writers must face the possibility of a trade-off between rules that reduce the number of parties by favoring large, dominant parties and rules that are more proportional and are less biased against significant minority parties located in more heterogeneous areas. This is not an easy issue to resolve, particularly in the Polish case of the early 1990's where it appeared that the presence of twenty to thirty parties was making governing very difficult. Of course, the ironic footnote to this part of the analysis is that it was the UD coalition that approved the new electoral rules shortly before the parliament was dissolved in 1993.

Conclusions

There are several concluding observations that arise from this analysis and from the Polish experience. One set relates to the joint processes of economic and political transformation, and under what conditions they may proceed in a reinforcing manner rather than in opposition to each other. A second concerns the need to think about the structuring of the "rules of the game" and how different rules will affect the reinforcing or opposing aspects of these changes. Lastly, we want to make some methodological observations about the joint nature of political and economic institutions and how we as scholars need to think about their interactions.

A Political Economy of Transformations

We see strong evidence that economic transformations, if successful, create new and important political interests, as a new economy is created. A distinctive characteristic of the new economy and the new political interests is that neither is evident nor predictable when the reforms are initiated. The Polish case illustrates very strongly that the development of a successful private economy does not result from the privatizing and restructuring of existing firms, though it is helpful if those processes proceed quickly and openly. The private economy is built primarily by the creation, survival and growth of new enterprises, the vast majority of which are begun by private individuals and organizations within the country. Though this part of the new economy might be envisioned by some policy-makers, (see Kornai, 1990 and Murrell, 1992) but by few in the case of the East Central European transition, it is virtually impossible to predict its size, location, and composition. Krugman (1991), for example, makes a strong point that much economic growth in the form of concentrations of new firms is often the result of accidents or stochastic events.

If the emergence of new economic organizations proved hard for analysts to envision, let alone predict, the creation of a pro-reform political constituency based on the impacts of these organizations proved even more obscure. Part of this obscurity is understandable, in that we are even less well trained to see future political organizations than we are to see future economic ones. A second factor, however, has to be attributed to the focus on privatization and restructurization as the keys to building a private economy. This focus immediately identified the constituencies and organizations sure to suffer from the reforms. More stress on the process of building new enterprises might have helped both the economy and the identification of possible pro-reform constituencies. In the case of Poland, and in most transitional states, this did not occur in the policy debates.

The emergence of the new economy and the new pro-reform political interests has both direct and indirect political consequences, all of which counter the forces attempting to stop or reverse the reforms. The directs effects are to foster a constituency that will vote for pro-reform parties, which with luck and helpful electoral rules will place pro-reform candidates in the legislature and other elected offices. We see this in Poland, in that even though the UD lost the election, they were still a viable opposition party within the Sejm and the Senate.

A related indirect effect is that the incomes generated in the new economy can provide resources for the pro-reform parties and organizations. Thus, the reform party can hope to receive

contributions, personnel, and other assistance from within these new economic organizations. The pro-reform individuals and organizations have an existing entity in which to participate and express their views. This latter aspect helps overcome some of the organizational barriers for political interests identified by Olson and others.

A much less obvious indirect effect is the presence and the ability of pro-reform constituencies to mobilize voters. As these constituents becomes more visible, it puts pressure on non-reform parties and inhibits their anti-reform elements. The effectiveness of this pressure will depend upon the electoral and parliamentary rules and the evolving party structures. If the rules are such to encourage fewer, larger, and more heterogeneous parties, even the non-reform parties will not be able to ignore the interests of the reform constituents. Spatial models of elections predict there will be pressures restricting extreme positions, at least among parties whose primary objectives are to win elections rather than just to espouse ideological positions. In the Polish case, this argument leads to the prediction that even the post-Communist parties, such as the SLD, will have to be aware of and avoid alienating parts of the pro-reform constituency, regardless of their initial campaign platforms.

The behavior of the SLD party, its leaders, and Pres. Aleksander Kwaśniewski since their election victory in 1993 provide an important case study. In the campaign, the SLD adopted positions that were seen as anti-reform, or at least as opposed to the then pace and direction of reforms. (As noted above, however, the PSL was much more militantly anti-reform than the SLD.) In the coalition government composed of the SLD and PSL that emerged after the election, the SLD was the dominant partner even though the PSL leader became Prime Minister. SLD deputies occupied most of the major economic posts and largely continued the pro-market reforms. There were changes in policies, as one would expect with a change in government in any country. The basic philosophy, however, has remained the same. These continuities are further underscored by Kwaśniewski's successful campaign to succeed Wałęsa as President. In all of these situations, the SLD leadership generally and Kwaśniewski specifically, have shown a clear strategy of moving closer to the center on reform issues. Leszek Balcerowicz, the originator of the economic reform plans in 1989-90 and someone who remains a strong reformer, was quoted in the *International Herald Tribune* in the summer 1996 as saying of Pres. Kwaśniewski, "I don't plan to be part of his team, but we agree on where Poland is headed."

One explanation for this behavior is the need for the post-Communist parties to recognize and adjust to the reality of the pro-reform constituency that has emerged and continues to expand in Poland as the new private sector grows. This pressure will be particularly acute for the SLD who must compete with the pro-reform parties that succeeded the UD. Both these parties have their base in the more developed and urban areas, as evidenced in the statistical results of their electoral support. In the competition for local positions and in the subsequent campaign for the presidency, the SLD and Kwaśniewski could not afford to move too far from the center and risk losing votes.

The electoral pressure created by the pro-reform constituency clearly has coincided with many personal interests, as often happens in politics. Many of the SLD leaders, through one means or another, have become very successful in the new economy. Some of this success has come by virtue of their insider positions in the restructuring of existing enterprises, as has so clearly happened in

the former Soviet Union. In Poland's case, however, many of these economically successful political leaders have become so through more entrepreneurial activity, either of their own or by members of their families. Having discovered that they could live far better under the new system than the old, they had few personal reasons to reverse or even restrict the reforms.

The timing and pace of the transformation is just as critical for the success of the political reforms as it is for the economic reforms. The so called shock therapy was favored over a slower transition because policy-makers argued that a slow process would allow economic actors to frustrate the reforms by exploiting the imbalances in supply and demand that would arise during the transition. (See Lipton and Sachs, 1990.) In political terms, a rapid shift to a new economy and a rapid increase in the number and size of new enterprises is also very important for a successful consolidation of the political reforms. As was evident prior to the economic reforms, the forced restructuring of the existing enterprises would lead to extensive unemployment, though people may have underestimated the true amount. A rapid rate of new firm creation and growth is needed to counteract these economic losses and to offset the political pressures they inevitably create.

A rapid rate of growth of new private enterprises has two important political consequences. The first and obvious one is that it will help reduce the aggregate level of unemployment by creating new jobs. As shown above, a lower unemployment level will aid the reform party and reduce support for the opposition. The difficulty here is that these jobs may require that workers develop different skills and attitudes than they exhibited in previous jobs and be associated with lower prestige, which may induce some residual opposition to the reforms. The second political benefit from the rapid creation of new private business is the growth of a political constituency that favors reform and that supports the reform party. As our example in Table 3 shows, if there had been a larger number of new private jobs, it would have added votes for the UD as well as reducing those for the other parties. The more prolonged the process of creating new enterprises, the slower will be the growth in the pro-reform constituency and the more influential and anti-reform will be the opposition parties.

Institutional Rules

The promulgation of rules that define a country's political institutions are a critical aspect of the transition to a democratic political system. Forming political parties and holding free elections are critical parts of the transition, but they are only a part. The rules governing the elections, the allocation of parliamentary seats after the vote, and the roles of the legislature, executive, and bureaucracies determine the influence of the various constituencies over the direction of economic policy. The number and range of institutional decisions is enormous and it is far beyond the scope of this paper to try to cover most of them. One critical one, and the one discussed here, is the method for allocating seats in the parliament.

There are a number of rules for translating the distribution of votes to a distribution of legislative seats. Each of these rules advantages some parties and interests and disadvantages others. Poland used different methods in each of its first two free parliamentary elections. The 1991 system was the more traditional proportional representation method. This produced a proliferation of small

parties in the Sejm that was seen by many people as a major cause of the inability of any coalition to form a durable government. As described above, the 1993 electoral rules were designed to favor the large parties and produce a distribution of seats for these parties that exceeded their electoral strength. The drafters of these rules succeeded, but in so doing weakened the reform party, whose relative strength was concentrated in districts where the seats proportion more closely matched the vote proportions.

One could envision other institutional rules that would have opposite effects, without being explicitly discriminatory. For example, Konieczny (1996) proposes the creation of much smaller, equally populated, single member districts for the Sejm rather than the large, differently sized multi-member districts used in 1993. One then needs to decide whether the representative will be selected by a plurality, as in the U. S. Congress, the Canadian Parliament, and the British House of Commons, or by majority vote, which would likely necessitate run-offs. Leaving aside the thorny question of drawing boundaries for such districts, we may still speculate about the implications of alternative systems for the distribution of seats relative to what was observed for a given distribution of votes.

Nowak's (1994) analytical work plus our analysis indicate that the creation of new enterprises, particularly at the beginning of the transformation process, occurs in very small localized areas that are much smaller than a voivodship. Expansion of the new economy occurs as these small areas expand through a contagion type process. Depending upon the size and concentration of these pockets of the new economy and how they were mapped into legislative districts, one could envision a quite different distribution of seats in the 1993 parliament. (This mapping question is, of course, at the heart of all districting debates.) This different distribution may well be to the advantage of a pro-reform party. Konieczny certainly thinks so.

Proper choice of institutional rules may permit simultaneous achievement of the goals of pro-reform representation and of a reduced number of parties, as was debated in Poland. Maurice Duverger in his classic work on political parties formulated what is now commonly called Duverger's Law. His law contends that single member districts with plurality voting (what he called a simple majority single ballot system) favors the development of a two party system. He further contends, though with less certainty, that single member districts with majority voting, and the likelihood of run-off votes, promotes a multiparty system. (See Riker, 1982, for extended and comprehensive discussion of Duverger's propositions.) The implication here is that single member districts with plurality voting may well have moved towards the goal of reducing the number of parties without disadvantaging pro-reform constituencies, who are geographically concentrated among segments of the anti-reform economy in heterogeneous regions. The Canadian case, however, suggests that Duverger's Law may well work at the district level but not nationally. Plurality voting may create two primary parties within each district, but there still may be a multiple parties system within the parliament.

Our point is not that we could have laid out a votes to seats rule that would have helped the pro-reform party in Poland's 1993 election, almost anyone could have done that in a large variety of ways. Nor are we contending that Poland should have adopted single member districts with plurality voting, though that would seem to be a system that might better meet their multiple

objectives. What we do contend is that there will be certain characteristics of the location, size, and growth of new private enterprises that will shape and define the pro-reform constituency. These factors should be incorporated into any decisions about political reforms and the definition of democratic institutions. It is certainly possible that not enough of this was done in the Polish case, as evidenced by Konieczny's analysis.

The Political-Economic Process

Our last conclusion is more conceptual than substantive. It is trite to say that political and economic processes and institutions are interconnected, at least in the cases of transforming societies. We want to take this observation a step further to say that they are not two related but separate processes but part of a single process. This process entails multiple variables, but many of these are jointly determined and endogenous, making the system a single process or institution rather than two separable processes or institutions. The evolution of the economy is very much a part of the evolution of political interests and organizations, just as the structure of the political institutions plays a major role in the evolution of the economy. In attempting to analyze political and economic transformations and in any attempt to develop policies governing such transformations, it is necessary that one take these endogenous factors into account in making predictions.

What is particularly difficult, and likely impossible, about such predictions is that this political economy is not just a complex system with many jointly determined variables. It is a system with many complex dynamic properties, some of which are likely to yield a system that is path dependent in the sense of Arthur, et. al.'s urn process. (See Arthur, et. al., 1987.) Our contention is quite consistent with the observations of North (1990) about the process of economic development and of Riker and Weimer (1993) about the transformation of former socialist countries. The complex interactions between the creation of new enterprises, the evolution of political interests, and the writing of rules defining political institutions, such as the ones translating vote distributions into seat distributions, are precisely the type of systems that Riker and Weimer have said are likely to be path dependent. One significant consequence of this path dependency is that one must be very careful in trying to forecast future equilibria based on some set of initial conditions, such as those in a planned socialist political economy; a set of exogenous shocks, such as a series of radical economic and political reforms; and a simple model of this political economy. (See Jackson, 1996, for an extended discussion of the technical difficulty in forecasting path-dependent processes based on initial conditions, exogenous shocks and simple econometric type models.) The need is to develop more evolutionary models that capture the dynamic processes, that identify processes that are path-dependent, and that permit various simulation type exercises in which different scenarios can be explored. Such modeling, whether through simulation or not, places considerable emphasis on the sequence and timing of events, such as how rapidly new firms are created and when elections would occur. These are details that were absent from analyses about the transitions to free-market democracies in all parts of the globe.

Appendix A: Data Summary

Variable	Natl Mean	Mean	St. Dev.	Min	Max
Vote for SLD[a]	.204	.203	.053	.090	.325
Vote for PSL[a]	.154	.193	.091	.049	.440
Vote for UD[a]	.106	.089	.039	.037	.229
Vote for UP[a]	.073	.067	.025	.027	.146
New Jobs[b]/(Pop/10)	.233	.199	.087	.083	.534
Large SOE_{1993}^{b}/Workforce	.188	.143	.071	.051	.431
Unemployment[c]	.164	.182	.056	.076	.303
Farm[c]	.265	.323	.154	.042	.621
Private Farm	.783	.787	.169	.441	.980
GDP/Capita[d]	–	.251	.059	.177	.433
Priests/(Pop/1000)[c]	.720	.700	.191	.317	1.194
Pop Density[c] (Pop/km^2)	123	144	145	46	739

a. *Rzeczpospolita,* September 27, 1993.

b. Special Data from GUS, see Jackson, et. al., 1995.

c. GUS, *Rocznik Statystyczny, 1994.*

d. *Rzeczpospolita,* August 25, 1994.

Appendix B: Statistical Model of Firm Creation and Growth

The model of firm birth, survival and growth is more elaborate and the estimation techniques more complex than shown in eqs. 1 - 3. The model contains seven endogenous variables: the number of private firms in 1990 and their employment, F_{90} and E_{90}; the number of these firms that survived to 1994 and their employment in 1994, S_{90} and E_{90-94}; the number of firms created between 1991 and 1994, F_{94}; and the number of those firms that survived to 1994 and their employment in 1994, S_{94} and E_{94}. The model also contains five exogenous variables: percent of the work force engaged in farming, $\%Farm$; the percent of the work force in 1990 employed in large state-owned enterprises, defined as enterprises employing more than 100 workers, $\%LSOE$; population density, defined as hundreds of people per km^2, $Dens$; the square of the log of density; and total population Pop. All variables are included in logarithmic form. The core of the model is the proposition that the comparative advantage of a voivodship in creating and growing the new economy is a function of $\log(\%Farm), \log(\%LSOE), \log(Dens)$, and $[\log(Dens)]^2$. In the model this set of relations will be denoted as $Comp\ Adv = XB = B_1 \log(\%Farm) + B_2 \log(\%LSOE) + B_3 \log(Dens) + B_4 [\log(Dens)]^2$. It is expected that the first two variables will be negatively related to the creation of the private economy. We expect that density will be positively associated with firm creation, though the square log density term is included in case congestion effects cause this relationship to be negative in more dense areas. $Comp\ Adv$ is expected to be a major determinant of the number of firms created per thousand population in 1990 and between 1991 and 1994. The estimated coefficients in this model provide important information about the types of areas most likely to develop a private economy and to generate pro-reform constituencies, and which ones will experience more difficulty.

The proportion of firms surviving in 1994 from the set existing in 1990 and from those born subsequently is a function of the number of new firms in each cohort, with the survival rate likely to be negatively related to the number of firms created. Employment per firm in 1994 is expected to be negatively related to the number surviving. Each of the birth, survival and size variables is related to the log of population to capture any scale effects.

The critical propositions in this part of the model is whether the birth rate of firms per capita in 1991-94, F_{94}/Pop, is related to the number of firms per capita existing in 1990, F_{90}/Pop, after controlling for the exogenous factors in $Comp\ Adv$ and covariances amont the relevant stochastic terms. The larger this relationship the greater any inferred contagion effects, and the more likely it is that the new economy and pro-reform constituencies will start and expand in concentrated areas and that areas without a strong comparative advantage will lag further and further behind.

The proposed model, with seven observed endogenous variables, has the following specification,

$$\log(F_{90}/Pop) = XB + B_{51}\log(Pop) + B_{01} + U_1 \tag{4}$$

$$\log(E_{90}/F_{90}) = C_{12}\log(F_{90}/Pop) + B_{52}\log(Pop) + B_{02} + U_2 \tag{5}$$

$$\log(S_{90}/F_{90}) = C_{13}\log(F_{90}/Pop) + B_{53}\log(Pop) + B_{03} + U_3 \tag{6}$$

$$\log(E_{90-94}/S_{90}) = C_{34}\log(S_{90}) + B_{54}\log(Pop) + B_{04} + U_4 \tag{7}$$

$$\log(F_{94}/Pop) = XB + C_{15}\log(F_{90}/Pop) + B_{55}\log(Pop) + B_{05} + U_5 \tag{8}$$

$$\log(S_{94}/F_{94}) \;=\; C_{56}\log(F_{94}/Pop) + B_{56}\log(Pop) + B_{06} + U_6 \tag{9}$$

$$\log(E_{94}/S_{94}) \;=\; C_{67}\log(S_{94}) + B_{57}\log(Pop) + B_{07} + U_7. \tag{10}$$

The difficulty in estimating the proposed model is that even though the structure is hierarchical it is nonrecursive because of the strong likelihoo that some of the stochastic terms are not independent of each other. In particular, the critical concern is that U_1 and U_5 are not independent. It is also likely that the pairs $[U_3, U_6]$ and $[U_4, U_7]$ are not independent. Thus, we cannot use something as simple as OLS to estimate this system. Instrumental variables (IV) is also not feasible because there are no omitted exogenous variables in eq. 8.[11] Our solution is to identify the value for C_{15} through the estimated covariance matrix for the residuals in the model. If we denote this residual covariance matrix as S_e, then $E(S_e) = C^{-1'}\Sigma_u C^{-1}$ where C is the matrix of coefficients summarizing the relations among the endogenous variables in eqs. 4 to 10. Our assumption about Σ_u is that U_1 through U_4 are all correlated; that U_5 through U_7 are all correlated; and that U_1 and U_5, U_3 and U_6, and U_4 and U_7 are correlated. We also permit U_1 to be correlated with U_6 and with U_7 to further reduce any possibility that constraints on Σ_u might bias estimates of C_{15}. With these specifications, the model is overidentified so that each coefficient and covariance can be estimated using any standard multiple indicator-multiple cause full information estimator. In our case, we used the program LISREL to do the estimation.

The results of the estimation are shown in Table B1. The fit of the model is exceptionally good. The χ^2 statistic is 22.61 with 24 degrees of freedom. This implies that if our specified model is the true structure, the probability of getting a worse fit by chance is .543, meaning that it is hard to reject our model and estimated coefficients as the true model. The coefficients in the *Comp Adv* component are,

$$
\begin{aligned}
Comp\ Adv = XB = \quad & -\underset{(.06)}{.295}\ \log(\%Farm) \quad -\ (\underset{(0.30)}{0.829} \quad -\underset{(.42)}{0.956}\ D_{93})\ \log(\%Lrg\ SOE) \\[4pt]
& +\underset{(.06)}{.198}\ \log(Density) \quad -\underset{(.04)}{.176}\ [\log(Density)]^2
\end{aligned}
$$

The relations between this component and the birth rate for new firms and among the endogenous measures of the new economy are presented in Table B1.

(Table B1 About Here.)

The equations for *Comp Adv*, F_{90}/Pop, and F_{94}/Pop are discussed in the text so they will not be addressed here. The 1990 employment per firm was essentially constant across voivodships. The coefficients of .05 on both the log of population and the log of the number of firms per capita are not statistically different from .0. The survival rates of 1990 firms were negatively related to the number of firms existing in 1990, indicating a congestion effect. There is, however, no evidence

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[11] We clearly do not want to risk a serious misspecification by omitting an element of X from this equation, as this would seriously positively bias our estimate for C_{15}, leading us to overstate the contagion effect.

of this congestion effect among the firms created after 1990. In 1990, survival rates were slightly positively related to population, but again this relationship disappeared among the later groups of firms. The larger negative constant term for the survival among 1990 firms relative to that among the later cohort indicates a much lower survival rate among the early set of firms. Part of this difference though may be explained by the longer life span of the 1990 cohort as some percentage of firms will exit each year. The proportion surviving over four years will be less than the proportion surviving over a shorter period, though it would take a very low annual survival rate to give the observed difference in the two constant terms. Lastly, the employment/firm in 1994 of the surviving firms from the 1990 cohort was strongly related to the number of surviving firms. The coefficient of .4 implies that for every one percent increase in the number of surviving firms, average firm size increased by .4%, though the coefficient is not statistically different from .0 at the .1 level. This result differs substantially from the comparable coefficient in the equation for the 1994 employment in firms started after 1990. In this equation, the prediction is that firm size decreases by .15% for each one percent increase in the number of surviving firms, but again the coefficient is not statistically different from zero.

Appendix C: Statistical Model of Party Vote Shares

The statistical model is designed to incorporate two significant features of the election data. The first is the non-linear functional form created by the fact that the dependent variables are proportions whose values are bounded by zero and one, as one observes with cumulative probabilities. Our data are particularly susceptible to error introduced by not addressing this feature, as many of the observed vote proportions are close to zero. Using a linear form would badly distort the exact relationship between voting and the explanatory variables.

The second important feature is the constraint that the vote shares for all parties sum to one. This constraint provides important additional information about the relationships between the vote and the explanatory variables. Specifically, we know that for any given change in one of the explanatory variables, the changes in all the vote share variables must sum to zero, i.e. any votes gained by one or more parties must reduce the votes going to the other parties by the same amount.

The model selected is a version of the multinomial logistic function. Letting P_{ij} indicate the proportion of the votes in district i expected to go to party j and Z_{ij} the support for party j in district i, this model posits the following expression for each P_{ij}:

$$P_{i1} = \frac{1}{1 + e^{Z_{i2}} + \ldots + e^{Z_{iJ}}} \tag{11}$$

$$P_{i2} = \frac{e^{Z_{i2}}}{1 + e^{Z_{i2}} + \ldots + e^{Z_{iJ}}} \tag{12}$$

$$\vdots \quad \vdots \qquad \qquad \vdots$$

$$P_{iJ} = \frac{e^{Z_{iJ}}}{1 + e^{Z_{i2}} + \ldots + e^{Z_{iJ}}} \tag{13}$$

The Z_{ij}'s are identified by taking the log of the ratio of the expected vote proportion for party j to that for party 1, i.e. $\mathcal{L}_{ij} = log(P_{ij}/P_{i1}) = Z_{ij}$. The P_{ij}'s and $\mathcal{L}_{ij}$'s are not observed but can be estimated with the observed proportion of the votes going to each party in the election, denoted by p_{ij}, where $p_{ij} = P_{ij} + \varepsilon_{ij}$. This gives $L_{ij} = log(p_{ij}/p_{i1}) = \mathcal{L}_{ij} + v_{ij} = Z_{ij} + v_{ij}$, or for district i,

$$L_i = \begin{bmatrix} L_{i2} \\ \vdots \\ L_{ij} \\ \vdots \\ L_{iJ} \end{bmatrix} = \begin{bmatrix} Z_{i2} \\ \vdots \\ Z_{ij} \\ \vdots \\ Z_{iJ} \end{bmatrix} + \begin{bmatrix} v_{i2} \\ \vdots \\ v_{ij} \\ \vdots \\ v_{iJ} \end{bmatrix} = Z_i + v_i.$$

The expected variance-covariance matrix for the error terms in district i will be[12].

$$E(v_i v_i') = \Sigma_{v_i} = \frac{1}{N_i} \begin{bmatrix} \frac{1}{P_{i1}} + \frac{1}{P_{i2}} & \frac{1}{P_{i1}} & \cdots & \frac{1}{P_{i1}} \\ \frac{1}{P_{i1}} & \frac{1}{P_{i1}} + \frac{1}{P_{i3}} & \cdots & \frac{1}{P_{i1}} \\ \vdots & \vdots & & \vdots \\ \frac{1}{P_{i1}} & \frac{1}{P_{i1}} & \cdots & \frac{1}{P_{i1}} + \frac{1}{P_{iJ}} \end{bmatrix}. \tag{14}$$

Taken across districts, Σ_{v_i} varies with the number of voters in each district and with the proportions of the votes for each party, producing a complex set of heteroskedastic disturbances. As will be shown momentarily, this will require a nonstandard estimation strategy.

The model next relates the values for Z_{ij} to a set of economic, social, and regional variables, denoted as X_i, so that $Z_{ij} = X_i B_j + u_{ij}$. The values for B_j indicate how the log of the vote ratios for party j relative to party 1 are expected to differ for different values of X_i. As with all statistical models the stochastic term u_{ij} represents the variations in the support for each party that are not accounted for by the X_i's. This addition gives the straightforward expression for the log of the observed vote ratios as, $L_{ij} = log(p_{ij}/p_{i1}) = Z_{ij} + v_{ij} = X_i B_j + u_{ij} + v_{ij}$. For district i this gives,

$$L_i = X_i B + u_i + v_i = X_i B + \omega_i. \tag{15}$$

We will assume the u_i's are drawn independently from identical distributions so that $E(u_i u_i') = \Sigma_u$ for all i. We also assume the v_i's are drawn independently, though not from identical distributions. Together, these assumptions give $E(\omega_i \omega_i') = \Sigma_{\omega_i} = \Sigma_u + \Sigma_{v_i}$ and $E(\omega_i \omega_{i'}') = 0$ for $i \neq i'$.

The model in eq. 15 is a variation of Zellner's seemingly unrelated regression estimator where,

$$L = \begin{bmatrix} L_1 \\ \vdots \\ L_i \\ \vdots \\ L_n \end{bmatrix} = \begin{bmatrix} X_1 \\ \vdots \\ X_i \\ \vdots \\ X_n \end{bmatrix} B + \begin{bmatrix} \omega_1 \\ \vdots \\ \omega_i \\ \vdots \\ \omega_n \end{bmatrix} = XB + \Omega. \tag{16}$$

The variation from Zellner's model arises because $E(\Omega \Omega') = \Sigma_\Omega$ is heteroskedastic and there is no straightforward way to transform eq. 16 to make it so.

The estimation strategy employed was to write a feasible GLS estimation program where

$$b = (X' \hat{\Sigma}_\Omega^{-1} X)^{-1} X' \hat{\Sigma}_\Omega^{-1} L. \tag{17}$$

In this procedure, Σ_{v_i} was estimated using the observed values for p_{ij} and values for b estimated assuming that $\Sigma_u = 0$. The residuals from this regression, $\hat{\omega}_i = L_i - X_i b$, were used to compute,

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[12]For a derivation comparable to the one appropriate here, see Theil, 1970.

$\sum_{i=1}^{n} (\hat{\omega}_i \hat{\omega}_i') = n\hat{\Sigma}_u + \sum_{i=1}^{n} (\Sigma_{v_i})$. This expression then led to an estimate for Σ_u that was then used to calculate a new set of values for $\hat{\Sigma}_\Omega$ and the estimation repeated. This iterative procedure was repeated until the values for $\hat{\Sigma}_u$ converged, which usually took about 6 iterations.[13]

The statistical advantage of this procedure is that it should yield consistent estimates for the coefficients and for their standard errors. This would not be the case with the traditional seemingly unrelated regression model, which assumes that the values for Σ_{ω_i} are the same for all observational units.

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[13]To test the robustness of the procedure, some estimations were done with non-zero starting values for $\hat{\Sigma}_u$. These all converged to the same values.

| | Total Employ | | Large 90[a] | | New Firms 1994 | |
	1990	1994	1990	1994[b]	Small 90[c]	1991-94
Public[d]	7003.8[e]		6605.2			
No Owner Change	5488.9	2822.9	5168.4	2698.5		
Ownership Change	1136.4	722.9	1068.1			
Privatized	378.5	246.2	368.7	236.9		
Private	471.3	1122.3	212.2	70.9	139.3	912.0
Domestic Owner	350.0	997.9	118.1	45.2	123.0	829.7
Foreign Owner	121.3	124.3	94.1	25.7	16.3	82.3

a. Enterprises larger than 100 employees in 1990.
b. 1994 Employment of enterprises classed as large in 1990.
c. 1994 employment in firms that were small in 1990.
d. Includes state-owned and collectively owned enterprises
e. Includes the employment in the yet to be privatised enterprises.

Table 1: Structural Change in the Polish Economy, 1990-94

Coefficients

Variable	SLD	PSL	UP	Other
Constant	0.952	-.905	-.688	1.659
	(0.36)	(0.53)	(0.43)	(0.38)
New Private &	-1.864	-2.196	-.929	-1.385
Foreign Jobs	(0.55)	(0.70)	(0.63)	(0.56)
Unemploy	1.335	1.627	2.323	.250
	(0.66)	(0.90)	(0.76)	(0.68)
% Large SOE	0.743	1.278	1.367	.981
	(0.57)	(0.74)	(0.67)	(0.59)
Farm	3.779	8.078	.343	2.173
	(1.23)	(1.59)	(1.44)	(1.29)
Farm*Pvt	-3.448	-3.487	-0.396	-.949
	(1.23)	(1.60)	(1.45)	(1.29)
Church	-0.675	-0.432	-.282	-0.256
	(0.21)	(0.26)	(.24)	(0.21)
Austria	-0.293	-0.150	-.251	0.035
	(0.13)	(0.17)	(.16)	(0.14)
Russia	0.421	0.231	.267	0.222
	(0.11)	(0.14)	(.13)	(0.12)
GNP/Pop	-.016	.647	.272	-.849
	(0.75)	(1.27)	(0.88)	(0.79)
Suchocka	-0.704	-0.582	.173	-0.828
	(0.21)	(0.27)	(.24)	(0.21)
Candidate	0.684	0.751	NA	NA
	(0.16)	(0.30)		
R^2	0.860	0.933	.614	0.810

Standard errors in parentheses.

Table 2: Party Support Equations

	Vote Share			Seats		
Party	Actual %	Predicted %	Change	Actual	Predicted	Change
UD	10.6	12.0	1.4	74	86	12
SLD	20.4	19.5	-0.9	171	163	-8
PSL	15.4	14.3	-1.1	132	129	-3
UP	7.3	7.4	0.1	41	42	1
Other	46.3	46.9	0.6	42	40	-2

Table 3: Expected Vote and Seat Changes Associated with New Private Jobs

	SLD	PSL	UD	UP	KPN	BBWR	German	TOT
				Party				

	SLD	PSL	UD	UP	KPN	BBWR	German	TOT
I. Illustrative Example								
Vote %	.21	.15	.10	.07	.06	.05	.00	.64
District 1								
Seats	2	1	0	0	0	0	0	3
Share	.67	.33	.00	.00	.00	.00	.00	1.00
District 2								
Seats	6	4	3	2	1	1	0	17
Share	.35	.24	.18	.12	.06	.06	.00	1.00
II. Three Hypothetical Alternative Aggregations								
A. Ciechanów, Ostrołęka, Łomża								
Actual	4	8	0	0	0	0	0	12
Combined	4	6	1	1	0	0	0	12
B. Jelenia Góra, Legnica, Leszno								
Actual	7	4	1	2	0	0	0	14
Combined	6	3	2	2	1	0	0	14
C. National								
Actual	171	132	74	41	22	16	4	460
Combined	149	112	77	52	34	32	4	460

Table 4: Alternative Seat Allocations

Eqn.	B_0	Pop	XB	F_{90}/Pop	S_{90}	F_{94}/Pop	S_{94}
F_{90}/Pop	0.712 (1.17)	0.188 (0.10)	1				
E_{90}/F_{90}	2.617 (0.25)	.046 (.03)		.053 (.07)			
S_{90}/F_{90}	-2.116 (0.40)	.092 (.04)		-.219 (.11)			
E_{90-94}/S_{90}	4.882 (1.20)	-.065 (.09)			0.399 (.26)		
F_{94}/Pop	.488 (0.96)	-.126 (.08)	1	.500 (.09)			
S_{94}/F_{94}	-.321 (.12)	-.022 (.02)				0.036 (.04)	
E_{94}/S_{94}	2.562 (0.40)	.127 (.05)					-0.153 (0.14)

All Variables in logarithmic form.

Asymptotic standard errors in parentheses.

Table B1: Estimated Structural Model for Creation of the New Economy

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