

Government Spending and the Equality of
Growth and Poverty Reduction in
Kazakhstan

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I. Introduction:

Kazakhstan's path since the end of the Soviet Union has been markedly different than those of other countries in the region. While Kazakhstan did experience economic hardship with its neighbors in the nineties, it has rebounded faster than them—its GDP growing from \$17 billion to \$143 billion between 1999 and today (World Bank, 1996-2010). Figure 1 shows the country's growth in gross domestic product (GDP) per capita between 1990 and 2010. Additionally, between 1996 and 2002 poverty rates measured at \$40 a month were halved. Yet despite improvement in the numbers, poverty does remain (Gregory Chapman, 2011). Analyses of Kazakhstan's growth and poverty dynamics thus continue to parallel literature on global poverty.

Inequality and poverty in Central Asia make countries particularly vulnerable to illegal economic activity. Indeed, there is already a heavy flow of narcotics through their borders. And even though Kazakhstan has fared better economically than many of its neighbors, it has not totally rooted out the problems that took hold immediately after the fall of the Soviet Union. In particular, organized crime, narcotics trafficking, and Islamic fundamentalists have found their way into Central Asian countries. Tajikistan, Kazakhstan, Uzbekistan, Turkmenistan, and Kyrgyzstan are at a crossroads of opium trade that is funneled to Russia and Europe (Frank Cilluffo, 2000). Profits from this drug

trafficking as well as other crimes fund terrorism in Afghanistan as well as around the world, making this region critical to international security.

Reasoning and studies have shown that crime is correlated with poverty, long periods of unemployment, and low levels of educational attainment (Chien-Chieh Huang et al., 2004). Thus with the goal of poverty reduction as a means to combat organized crime, continued economic improvement within the borders of each of these countries should be a goal for nations cognizant of security. Having already achieved greater economic success, Kazakhstan can be a model for its neighbors. In fact, its lessons can likely be applied to other middle income or developing countries in other parts of the world as well. Declining inequality within poverty suggests that the poorest and therefore most vulnerable for illicit activity are being helped the fastest. Additionally, country-wide inequality is an important factor in determining the future of poverty reduction. From a policy perspective it is thus pertinent to ask, as poverty rates have fallen in Kazakhstan over the last decade, which forms of government spending have been the most effective at reducing general inequality as well as inequality between those still in poverty?

II. Literature Review:

It is widely claimed that economic growth reduces poverty as everyone in a country benefits from the growth. Indeed, studies have shown a strong

relationship between GDP growth and income growth for the poorest 40% (Michael Roemer and Mary Kay Gugerty, 1997). However, there is significant debate on this topic. Some economists argue that the relationship between growth and poverty is dependent on the proxies and the methodology used. Additionally, researchers observe that ‘growth,’ far from being a generic concept, has many variations which each come with unique implications. For example, growth led by employment can only help to reduce poverty to a particular level since certain groups of people, such as the elderly, are unable to work (Christopher Johnson et al., 2011). This thesis has been supported by the interactions between growth and poverty reduction in the United States. Post World War II economic growth did in fact reduce poverty by raising overall standard of living throughout the country. However, this relationship significantly diminished between the 1970’s and 1990’s (Michael LeBlanc, 2001). At that point, the exact relationship between the two is again debatable, depending on proxies. One relevant point that some researchers make is that basic headcount measures of poverty miss the story that distribution sensitive measures provide (Christopher Johnson, John P. Formby and Hoseong Kim, 2011).

A recent estimate of the elasticity of growth on poverty reduction in a sample across countries mirrors these concerns about the overreaching principle of growth equaling poverty reduction. Similar to earlier arguments, it suggest that the existence of a positive correlation in itself is not telling, instead the size of the

elasticity is particularly pertinent to studies on poverty. If it is high, then pursuing growth can itself be a successful means of poverty reduction. However, if it is low, other factors should be considered by policymakers—a view already espoused by the critics of heavy reliance on economic growth (Francois Bourguignon, 2003). Yet studies that use aggregate world data to compute the elasticity of economic growth on poverty reduction lack relevance to individual countries looking to establish pro-poor growth policies. Research applicable to a particular country should therefore be based on that country, or countries with similar macroeconomic patterns. This is, again, due to the existence of different types of growth that countries may achieve. For usable results, it is important to place analysis in a consistent context. A study specific to Kazakhstan following these outlines would therefore be better suited to inform policy makers in that country.

Indeed, this type of study has partially been conducted about Kazakhstan. It investigates the causes of poverty reduction in the country by analyzing regional data between 2000 and 2002. It confirms that economic growth as measured by GDP has been a major agent of change in Kazakhstan, with a rather high elasticity significant at a one percent level (Pradeep Agrawal, 2007). Yet the study goes beyond economic growth to find out which other variables have mattered in decreasing the rate of poverty.

The study finds that social spending had a significant impact on poverty reduction in that time period as well. Within the measures of education, pensions, and health, however, only pension spending has a negative relationship with poverty levels that is significant at a five percent level. Yet this study is limited in the number of years it spans, and it warns that research with a larger data set will most likely provide more telling results. In particular, it is expected that spending on health and education are investments with payoffs on a longer time horizon than pension spending (Pradeep Agrawal, 2007). This is because these types of spending are the basis of long term improvement of human capital. Publicly provided education in Kazakhstan has the benefit of reaching even children of poor families, thus providing potential for intergenerational social mobility and decreasing inequality (T. Paul Schultz, 1993). A new study accessing a wider range of data would provide more accurate results. An updated and more expansive study on these factors would thus be a valuable contribution to research on how best to move forward in poverty reduction in Kazakhstan.

Yet the future of Kazakhstan's poverty reduction will also depend on another factor. It has been hypothesized that decreasing inequality during economic growth leads to declining poverty rates (Richard H. Jr. Adams, 2003). This has been confirmed by research done by Bruno, Ravallion, and Squire on developing countries (Michael Bruno et al., 1998). Similarly, the study by Agrawal on the causes of poverty reduction show that inequality has a strong

positive correlation with poverty in Kazakhstan (Pradeep Agrawal, 2007). Moreover, research shows the importance of starting levels of inequality on poverty reduction. Countries with low initial inequality experienced a growth elasticity of poverty that was twice as high as for countries with high levels of starting inequality. Additionally, when economic growth is defined by survey mean (income or consumption) it is a much better predictor of poverty reduction than GDP. This suggests that increasing income across a population, beyond simply growing GDP, should be the goal of governments that want to prioritize poverty reduction. This again implies that more equally distributed gains benefit a country. Lastly, more sensitive poverty measures that consider the extremity of poverty, including the poverty gap and the squared poverty gap, react more strongly to changes in survey mean than poverty headcount does (Richard H. Jr. Adams, 2003). These therefore provide a more nuanced understanding of poverty. This study thus uses the poverty gap as one way to look at the trends in poverty reduction while still also assessing the changes in inequality.

It is notable that Kazakhstan is an oil and natural gas-rich country, and the energy sector makes up about a third of the economy (Gregory Chapman, 2011). This macroeconomic structure often has implications for wealth distribution, and, indeed, the CIA Factbook ranks Kazakhstan as worse than its neighboring countries in inequality in its distribution of family income (United States Central Intelligence Agency). The implications are that Kazakhstan is threatened with

stalling poverty reduction as inequality grows. This ties back into the literature on the different types of growth that individual economies face. Thus despite the encouraging figures of economic growth in Kazakhstan, it cannot be assumed that the trend will continue with the same elasticity, and it is important that attention is not diverted from the still crucial goal of poverty reduction.

Although drawing from Agrawal's results about the effect of pension payments on poverty rates, this study also notes research which shows that countries that prioritize education and health experience improved income distribution as well as increased average incomes (Michael Bruno, Martin Ravallion and Lyn Squire, 1998). Indeed, the Organization for Economic Cooperation and Development (OECD) finds a negative correlation between poverty and education level in Kazakhstan (2007). Notably, Kazakhstan suffers from a shortage of skilled labor. Meanwhile, the wage gaps that have opened up since the end of the Soviet Union are a result of the market prioritizing labor that requires certain skills (Bolat L Tatibekov et al., 2004). Increasing educational levels through the country could therefore help the 44% of workers in Kazakhstan that are currently low income (2007).

This study will thus look at the effects on poverty and inequality reduction of government spending on education, health, and pensions. Yet while studies show that pension spending reduces poverty on the whole, there are concerns about the current design of the recently privatized pension program in

Kazakhstan. In 2004 pensions were only reaching three-quarters of those above pension age. Additionally, the minimum pension receipt is still at only 40% of the subsistence minimum. Most importantly, the contribution style system of pensions also disadvantages particular groups, namely women. It is therefore possible that while pension spending is helping to reduce the headcount of those in poverty, the poorest of the poor are thus far missing the benefits (Jane Falkingham and Athina Vlachantoni, 2010).

This study brings a new perspective to the literature on poverty reduction in Kazakhstan. Beyond simply assessing reduction in itself, it takes into account that the extremity of existing poverty matters by looking at measures of the poverty gap and poverty acuteness. This assessment takes into account that improving conditions for those furthest below the poverty line is a measure of whether economic growth and policies are helping those who need it the most. Identifying the factors helping the poorest assesses the nature of poverty reduction beyond the less insightful aggregate studies on the numbers above and below a narrow line. Additionally, by analyzing the causes of overall inequality, the study's findings have implications for the future of both poverty reduction and economic growth.

Even as Kazakhstan's poverty levels hopefully continue to fall, these results maintain significance in the discussion of pro-poor growth. The implications of this research will not end as poverty approaches elimination.

Instead, the effect of inequality on growth will continuously threaten to undo prior gains. With these negative implications of inequality in a country, it is important for states to continue to craft policies that increasingly reduce hardships and maintain opportunities for the lowest income levels. This study captures what the most effective pro-poor policies have been in Kazakhstan, expecting that these will continue to be so.

III. Economic Model:

This study determines which uses of government spending have affected the egalitarian nature of growth and poverty reduction the most, while also measuring changes in the extremity of poverty. It is known that the headcount of people below the poverty line is falling, but are the poorest being helped the quickest as literature concerning international poverty and growth rates would expect? Additionally, how have these types of spending affected changes in overall inequality in the country?

Economic growth is assumed to have an inverse relationship with both types of inequality, as this has already been observed in other countries. Conversely, higher levels of unemployment will see an increase in inequality. Research shows that there is a strong positive relationship between unemployment and poverty, and it is expected that this will be apparent in its relationship with the extremity of poverty in this study (Christopher Johnson, John P. Formby and

Hoseong Kim, 2011). This is because there is a lower demand from firms for unskilled work. Thus those most likely to be out of work are unskilled, low wage workers. Additionally, this demand has a higher elasticity, thus making unskilled and low-income workers the first to be let go when the firm is experiencing a downturn.

I expect that government spending on health, education, and pensions will all decrease societal inequality as well as the inequality of just those in poverty. However, health spending, which has a longer time horizon and a less direct impact on earning capabilities, will not be strongly correlated yet. Additionally, I expect that pension spending will mitigate overall inequality more than that within poverty. This is because the pension system in Kazakhstan has been privatized in the past decade, and certain components of its design may decrease its effectiveness in equally distributed poverty reduction. Certain groups such as women who are already at a higher risk for poverty are disadvantaged by a system that penalizes those who spend fewer years in the workforce. So while pension spending redistributes wealth in general from higher incomes to lower incomes, it fails to proportionally help those with the lowest lifetime incomes. Figure 2 shows this hypothesized relationship between pension payments and Gini coefficients and pension payments and poverty acuteness.

It is expected that out of government spending, that on education will have the largest effect on both the Gini ratings and measurements of poverty acuteness.

A successful educational system provides quality education and therefore economic empowerment to children regardless of their economic background. Accordingly, education is mandatory and universal in Kazakhstan. Its success may be evidenced in the increased level of social mobility that Kazakhstan has achieved since independence (Azamat K. Junisbai, 2010).

If children who may have traditionally only been able to provide unskilled labor attain a high quality education, there is potential for a major gain in equality. There is currently a large supply of unskilled labor and a limited supply of skilled labor in Kazakhstan. Additionally, the demand for unskilled labor is below that of skilled labor. This exacerbates the income gap, thus affecting Gini ratings. Figure 3 shows the impact that higher quality education has on the equilibria of both skilled and unskilled labor. Note that the 'price' of labor is the wage that the firm pays and thus corresponds to incomes. Moving individuals from unskilled to skilled workers increases their wage. Additionally, the overall shift in the economy reduces the wage gap and therefore countrywide inequality.

Overall, each of these types of spending is distributing wealth and other gains to citizens, and should thus reduce both types of inequality. Of these, education should have the strongest effect. Additionally, the measure of economic growth should have an inverse relationship with both types of inequality while unemployment should be directly correlated to these.

IV. Empirical Strategy:

This study used three regressions with Gini coefficients, poverty acuteness, and poverty gap, respectively, as the dependent variables. Independent variables included government spending per capita on education and health, average pension payments, unemployment, and economic growth as described by nominal monetary income. This was in place of GDP growth, which has been shown to be a less effective predictor of poverty reduction, and thus less pertinent to this study. Table 1 shows the descriptive statistics for each of the variables.

The Gini coefficient is a measure of income inequality, with zero being perfect equality and one meaning perfect inequality. The coefficient of the poverty gap measures the distance between a living wage and the incomes or consumptions of those below that living wage. It is expressed by the size of the income's deficiency correlated with the number of members of the household. Poverty acuteness measures the inequality between those below the poverty line. It is the average squared deviation of incomes from the average below the poverty line.

Kazakhstan's Agency of Statistics reports data on income that were collected in household surveys. Average pension payments and unemployment by region were also collected from the Agency of Statistics. Total spending on health and education was collected from the budget reports on the website of Kazakhstan's Ministry of Finance. Population numbers from the Agency of

Statistics were used to calculate the spending per capita. The dependent variables including Gini coefficients, poverty acuteness, and poverty gap are from the Statistical Agency. All of the data are reported yearly, by region spanning between 2003 and 2009.

As with any study the variables measuring spending are only rough predictors of what is occurring in the country since they cannot account for the differences in the ways in which regions use the money. Additionally, determining the causes of changes in the overall poverty rate such as Agrawal's study began to do could ideally complement this study. This was not possible, however, because of the lack of availability of regionally aggregated poverty data. In fact, the data do exist regionally by year at the World Bank, but due to time constraints they were not accessed. Additionally, the use of more causal variables may better help to predict the changes in equality. As with any household survey, the results are subject to error from individuals inaccurately reporting their incomes either intentionally or accidentally.

The data collected are panel data, reported by region across seven years. Natural log variables were created for the three forms of government spending and the economic growth indicator, thus the regression is linear log. This same equation is used for each of the three dependent variables:

$$\begin{aligned}
\text{Poverty acuteness}_{it} = & \beta_1 \ln(\text{education spending per capita})_{it} + \beta_2 \ln(\text{health} \\
& \text{spending per capita})_{it} + \beta_3 \ln(\text{average pension})_{it} + \beta_4 \ln(\text{income})_{it} + \beta_5 \\
& (\text{unemployment})_{it} + u_{it}
\end{aligned}$$

The results in Table 2 show that unemployment is the most consistent predictor of both inequality and the extremity of poverty. It is positively correlated with increases in inequality and levels of poverty, significant at a one percent level. This is as expected. Notably, unemployment has a high elasticity with the poverty gap, with a unit fall in unemployment (i.e. 8% to 7%), the poverty gap falls by 1.71 points.

Spending on education is significant at the five percent level for the poverty gap and at the ten percent level for poverty acuteness. Its relationship with all of the variables is negative, again as expected, although its effect on the Gini coefficient is negligible. A one percent increase in spending correlates with a 4.11 point decrease in the poverty gap. This reflects a relationship between education and earning power despite the short period of time covered. This is likely because those states with relatively higher education spending per capita in 2003-2009 were likely to have the same characteristic in years prior to those measured. The negative correlation with poverty gap is thus most likely due to this realization of gains from past rather than current investments in education. These results are consistent with the predictions that education reduces poverty,

but they are not strongly in support of education as a means of reducing inequality. It seems that educational gains are being distributed equally, thus maintaining the status quo in levels inequality.

Spending on health appears to be uncorrelated with each of the dependent variables. It should be noted that health spending has an even longer time horizon than education spending. Thus the hypothesis of regions realizing correlated educational gains a decade late cannot be applied to health since one would need to look back to Soviet times, where you could no longer expect consistency in spending patterns. It is interesting that income, which is the predictor of economic growth, is also uncorrelated with the dependent variables. This certainly brings into question what the goals and strategies of policymakers should be.

Interestingly, while average pension size has an inverse relation with the Gini coefficient, it actually increases the measure of poverty acuteness, although only significant at a ten percent level. A one percent increase in pension spending correlates with 1.53 point increase in poverty acuteness. This is consistent with the hypothesis that although pension payments generally have a redistributive effect, they are failing to help the poorest. This may be due to the nature of the pension system which maintains inequality in the way payment rates are determined, favoring those who worked for higher pay over a greater number of years. Notably, average pension spending does not have a statistically significant

impact on the extremity of poverty, most likely due to its incongruous effects on distribution under the poverty line.

V. Conclusion and Directions for Further Research:

In conclusion, the regression provides mixed results on government spending on social programs as a strategy to reduce poverty acuteness, the poverty gap, and countrywide inequality in Kazakhstan over the past decade. Education is strongly correlated with reductions in the poverty gap, although not with either measure of inequality. Spending on health has had negligible effects. And while pension spending is correlated with a reduction in countrywide inequality, it is actually correlated with an increase in poverty acuteness, albeit with a lower confidence level. Unemployment has the most consistent effect on the dependent variables. This suggests that policies targeting job creation are the best course of action for equally distributing gains in poverty reduction.

Further research on the most effective forms of poverty reduction in Kazakhstan are still needed. If job creation is the best solution, does the country need to prepare its citizens for particular types of jobs? Are there broader economic goals that should be pursued such as directing credit into certain industries to capitalize on Kazakhstan's comparative advantages? Additionally, insight into who the winners and losers of these strategies are is critical. Are women and female-headed households making gains as quickly as men? Are

ethnic Kazakhs lagging behind ethnic Russians in gains to incomes and expenditures as they have in the past? Are the historically poorer rural areas making gains well enough on par with urban areas? Since increasing employment levels help to reduce both inequality and poverty, it is important to determine which government policies encourage these widespread gains.

Overall, there are many questions left regarding the future of equality and increasing standards of living in Kazakhstan. As policy makers are inevitably faced with decisions that affect both of these, it will be important to provide them with sound research. It is essential to determine what is working for and against the future of economic success for individuals and the country as a whole.

VI. References:

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VII. Tables:

Table 1: Descriptive Statistics

<u>Variable</u>	<u>Standard</u>		<u>N</u>
	<u>Mean</u>	<u>Deviation</u>	
Gini Coefficient	0.27	0.03	112
Poverty Acuteness	1.79	1.70	112
Poverty Gap	5.12	4.20	112
Average monthly pension (in tenge)	10,986	3,174	112
Annual education spending per capita (in tenge)	20,716	11,596	112
Annual public health spending per capita (in tenge)	14,265	8,696	112
Unemployment (%)	7.82	1.20	112
Income (nominal monetary income in tenge)	24,566	16,167	112

(The Agency of Statistics of the Republic of Kazakhstan, 2011a, b)

(The Agency of Statistics of the Republic of Kazakhstan, 2011a)

(Ministry of Finance of the Republic of Kazakhstan, 2003-2010)

Table 2: Results

	(1)	(2)	(3)
	Poverty Acuteness	Poverty Gap	Gini
<u>Variable</u>	<u>Coefficient</u>	<u>Coefficient</u>	<u>Coefficient</u>
Education	-1.56* (0.859)	-4.11** (1.917)	-0.004 (0.018)
Health	0.08 (0.594)	0.46 (1.325)	0.02* (0.013)
Average Pension	1.53* (0.834)	2.99 (1.861)	-0.10*** (0.018)
Income	-0.24 (0.805)	-0.29 (1.796)	0.03* (0.017)
Unemployment	0.68*** (0.201)	1.71*** (0.449)	0.014*** (0.004)
N=	112	112	112
R-squared within	0.69	0.73	0.47

(The Agency of Statistics of the Republic of Kazakhstan, 2011a, b)

(The Agency of Statistics of the Republic of Kazakhstan, 2011a)

(Ministry of Finance of the Republic of Kazakhstan, 2003-2010)

Notes: T-statistics in (). *** indicates statistically significant at a 1 percent level, ** at a 5 percent level, and * at a 10 percent level.

VIII. Figures:

Figure 1: GDP Per Capita Growth

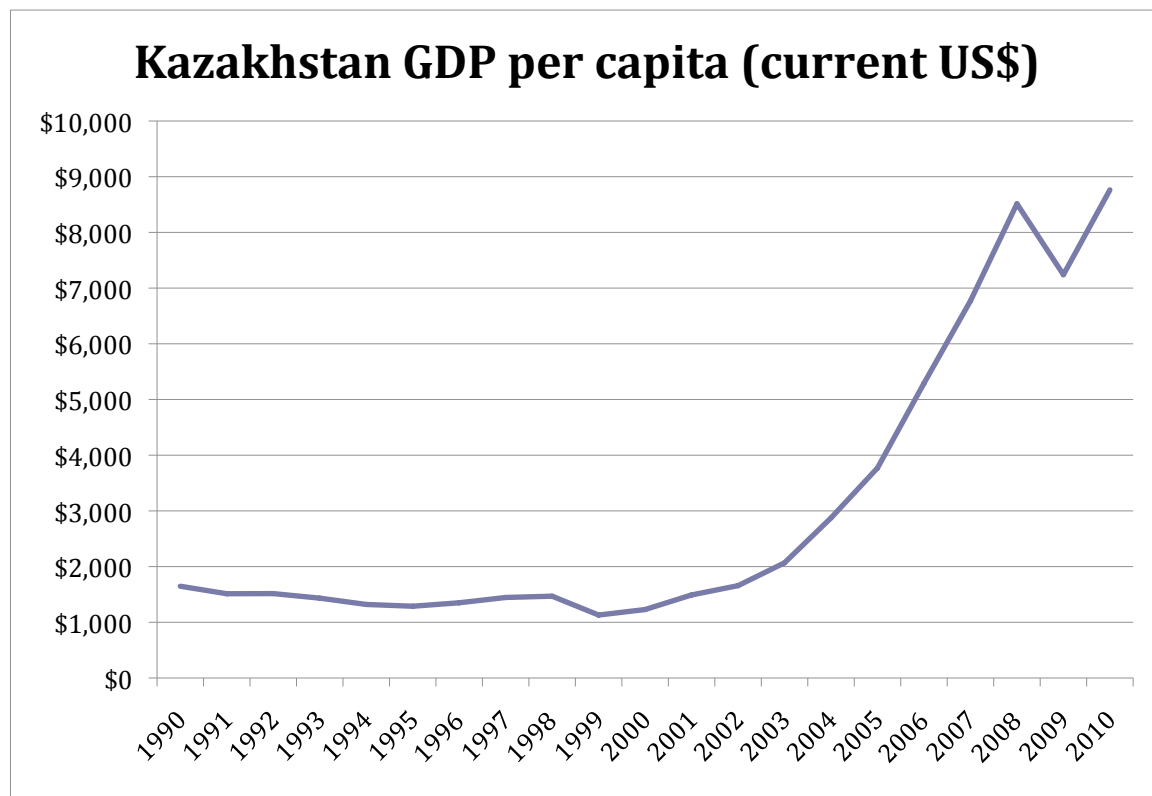


Figure 2: The Effect of Pension Payments on Inequality

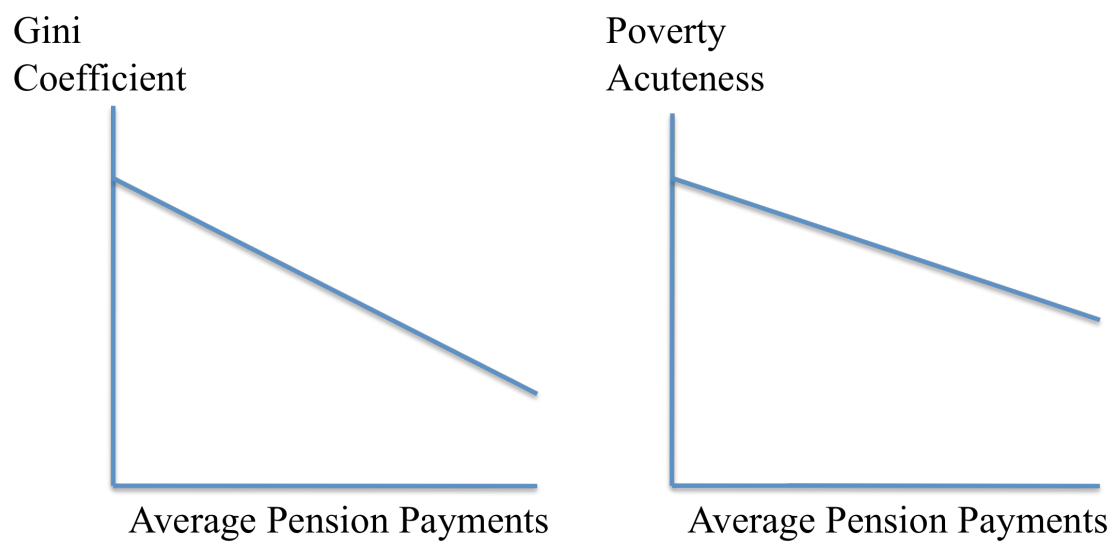


Figure 3: Economic Model for Education and the Labor Market

