STERGOS KALOUDIS

ENERGY AND THE DILEMMA OF SUSTAINABILITY IN THE RUSSIAN FEDERATION

A tanulmány azt kívánja bizonyítani, hogy az egyszektoros endogén növekedési modell önmagában nem képes magyarázni az orosz gazdaság növekedési pályáját. A szerző[1] történeti áttekintésben mutatja be, hogy Oroszországban az elmúlt évtizedben megszilárdultak azok az alacsony hatékonyságú és korrupt politikai és gazdasági intézmények, amelyek eltérítették az országot az egyensúlyi gazdasági növekedéstől. E pályára való visszaálláshoz szükség lenne arra, hogy az emberek bízzanak a fennálló rendszerben, a jelenlegi intézmények azonban képtelenek e bizalom megteremtésére. A tanulmány a hosszú távú egyensúlyi növekedési folyamatról való letérés bemutatása mellett javaslatokat is tesz a helyzet javítására és további kutatási irányokat ajánl.

1. INTRODUCTION

Endogenous models of growth are good analytical tools to evaluate and predict growth patterns within countries. In contrast to the body of exogenous growth literature, which looks to random shocks as the source of long-run growth, endogenous models seek to examine how economic agents optimally choose the amount of resources devoted to physical and human capital development and thus improvements in technology and long-run growth [Barro and Sala-i-Martin 1995: 38]. The key factor behind the endogenous model of growth is the level of investment that takes place in order to maintain the optimal balance of physical and human capital within the economy.[2] The rationale underpinning this is that without adequate maintenance of these elements long-run growth cannot take place. Only when an economy reaches its optimal level of physical and human capital can sustained growth occur, leading towards quicker convergence across the state and in the world economy.

The one sector model for endogenous growth can be useful to evaluate the current status of the Russian economy. Given the degree of hydro-carbon based growth in Russia this is an appropriate starting point. Moreover, taking into account that the level of the two fundamental inputs into the economy, human and physical capital, were at their optimal levels at the time of the dissolution of the Soviet Union in 1991,

1 Stergos Kaloudis is a Doctoral Candidate in the Department of Politics at The Catholic University of America in Washington, DC. He has published works previously on Russian and Ukrainian Foreign Policy, Russian Federalism, and Turkey and the European Union. He has worked consistently under the guidance of Dr. Sophia Aguirre in the Department of Economics, in which he would like to especially thank for guidance on this project, and Dr. Joan Urban in the Department of Politics.

2 Physical Capital is defined as the capital stock of the nation or region in terms of mechanical infrastructure and machinery. Human Capital is the stock of people endowed with literacy, education and specialized expertise.

Russia should have seen protracted and sustained growth leading towards convergence across the Federation and within the world economy. A decade and a half ago it was readily believed that,

> "...(with) the right economic policies the USSR is placed to become perhaps the most dynamic economy of the 21st century. .... Soviet reserves are second to none in a whole range of items. The USSR has a large educational and scientific base and in several sectors, like metallurgy and long-distance energy transmission, leads the world, while its defense sector on the whole has kept up with global developments." [Sakwa 1990: 313]

The puzzle this paper then seeks to examine is that in a state as seemingly advanced as Russia in terms of infrastructure development and education, why has there not been sustained growth or convergence across the regions and the world in the years following the adoption of capitalism within these areas. Economic growth within the industrial and high technology sectors, which should have been Russia's strongest areas of comparative advantage given its relatively cheap labor force, endowed infrastructure and high levels of education, has been wildly skewed across the Federation. Moreover, if the growth model is not sufficient to explain the nature of the current state of affairs in the economy then what is?

Through an analysis of the Russian historical case over the past 15 years, the paper seeks to underline the apparent shortcomings of a strict application of the endogenous model of growth to the Russian case. This is carried out in the guise of policy prescriptions meant to demonstrate the need to focus on institutional maintenance. The outcome of the argument suggests that Russian elites have failed to foster the necessary transparency and coherence in institutions required to maintain a sustainable market economy. Concurrently, they have failed to successfully incorporate the masses by consolidating trust in the governing economic and political regimes, thus inhibiting a return of the economy to steady state growth within its areas of natural advantage.

2. THE MODEL

For the purpose of this exercise, endogenous growth theory can be defined as seeking to analyze growth as a historically contingent process which forgoes traditional concepts of equilibrium in favor of organizing concepts that seek to understand growth as an economy or society wide process of economic and institutional change. [Roberts and Setterfield 1995] Following standard models, it is assumed that there is one sector that drives the economy and the two key inputs are human (H) and physical (K) capital.[3] This model also assumes a Cobb-Douglas function and that the households are the sole producers of goods within the economy.[4]

3 For simplicity purposes this model contains the following assumptions: there are constant returns to all capital, positive externalities to human capital in production, labor is fixed, and human capital has increasing returns to scale. The results do not vary significantly if these assumptions are relaxed.

4 The production function follows a Cobb-Douglas function with constant returns to scale, where the coefficients $\alpha + \beta = 1$, for $\beta = 1 - \alpha$.

The production function for this model is:

$$Y = AK^{\alpha}H^{1-\alpha} \quad (1)$$

Where Y is the total production, A is the portion of output produced by physical capital and $0 < \alpha < 1$, and $H = L * h$, where h stands for the quality of workers and L is the number of workers. Both L and h are perfect substitutes in the production chain and therefore the amount of labor is not a source of diminishing returns. Output (Y) is distributed amongst three elements; C which is consumption, IK denoted as investment in physical capital and IH which is investment in human capital. Output (Y) is then equal to $C + I_K + I_H$. K depreciates at a constant rate captured by δ.

Therefore, the resource constraint for the economy is:

$$Y = AK^{\alpha}H^{1-\alpha} = C + I_K + I_H \quad (2)$$

Where rate of growth in capital is $\gamma K = I_K - \delta K$ and $\gamma_H = I_H - \delta_H$. Where delta refers to the rate of depreciation of physical capital along with the depreciation of human capital as a result of a loss of skills or death. This model does not assume a decreasing rate of return of human capital because it can become more efficient and diffused in this model, increasing rates of return are possible.

Given that the households are the main producers within the economy, the dynamic optimization problem can be solved by the Hamiltonian function which assumes that population (n) = 0.

$$J = u(c)e^{-\rho t} + \nu\,(I_K - \delta_K) + M(I_H - \delta_H) + \omega\,(AK^{\alpha}H^{1-a} - C - I_K - I_H) \quad (3)$$

Where u(c) is the utility function, ρ_t is the time preference, ν is the shadow price associated with growth in K, and M is the shadow price associated with growth in H. ω is the Lagrange multiplier associated with the budget constraint seen in equation (2).[5]

The utility function is defined as follows:

$$u(c) = (C^{1/\Theta} - 1) / (1 - \Theta) \quad (4)$$

Where O is the inter-temporal rate of substitution and $\Theta > 0$, so that the elasticity of marginal utility equals the constant $-\Theta$.[6]

Neglecting the inequality restrictions $I_K > 0$ and $I_H > 0$ for the moment and maximizing equation (4) subject to (2) we can obtain the growth rate of consumption:

5 In mathematical optimization problems, Lagrange multipliers are a method for dealing with constraints. The method introduces a new unknown scalar variable, the Lagrange multiplier, for each constraint; and forms a linear combination involving the multipliers as coefficients. This reduces the constrained problem to an unconstrained problem.

6 The inclusion of the -1 in the formula is convenient because it implies that u(c) approaches log(c) as $\Theta \to 1$. The term $-1/(1-\Theta)$ can, however, be omitted without affecting the subsequent results, because the household's choices are invariant with respect to linear transformations of the utility function.

$$\gamma_C = 1/\Theta\ [A\alpha\ (K/H)^{-(1-\alpha)} - \delta - \rho] \quad (5)$$

Where γC is the growth rate of consumption and $[A\alpha\ (K/H)^{-(1-\alpha)} - \delta - \rho]$ equals the net marginal product of physical capital. Furthermore, this implies that the growth of consumption has an inverse relationship with inter-temporal rate of substitution (Θ) and that it is related to the marginal productivity of capital directly. The second order condition is MPK = MPH whereas $MPH = A(1-\alpha)(K/H)^{\alpha} - \delta$. Where MPH is the marginal productivity of human capital.

The ratio of the two capital stocks is given by:

$$K/H = \alpha/1-\alpha \quad (6)$$

Thus, the net rate of return to physical and human capital is given by:

$$r^* = A\alpha^{\alpha}(1-\alpha)^{(1-\alpha)} - \delta \quad (7)$$

Where r* is the rate of return.[7] If one substitutes equation (6) into (1) the production function becomes:

$$Y = AK[(1-\alpha/\alpha)]^{(1-\alpha)} \quad (8)$$

Thus, the two sector model is equivalent to the one sector model if we assume the transversality condition holds. For the purposes of better capturing the Russian scenario, we introduce the restriction of $I_K > 0$ and $I_H > 0$ and assume that in this case the economy begins with two capital stocks, K(0) and H(0). If $K(0)/H(0) < \alpha/(1-\alpha)$ then H is abundant relative to K and consequently H will decrease and K will increase at t_0. Consequently, the household would choose $I_H = 0$ and the household optimization problem becomes:[8]

$$J = u(c)e^{-\rho t} + \nu(AK^{a}H1^{-a} - C - \delta K) \quad (9)$$

Here instead of n = 0, rate of growth of human capital equals its depreciation ($\gamma H = -\delta$). In addition K/H increases over time up to $\alpha/1-\alpha$. At this point MPK = MPH and, consequently, the $I_H > 0$ restriction becomes nonbinding on H and K and they increase forever at γ^*.[9] The outcome of the model indicates that during the transition period the neo-classical model holds and long run growth is greater than zero even if there are no exogenous shocks to the economy since there is not a source of diminishing returns in this model. This implies that there is some element of a convergence property because the growth rate $\gamma_K = K\cdot/K$ and $Y = Y\cdot/Y$ decline monotonically overtime as both rates move towards $\gamma^* > 0$. Consequently, they are

7 The growth rate of Y, K and H is the same as the rate of consumption.

8 $I_H = 0$ infers that $\gamma H = -\delta$ and the path followed by H is $H(t) = H(0)e^{-\delta t}$ for t0, ... ti.

9 This r* is constant because equation (1) exhibits constant rate of returns with respect to K and H. Therefore diminishing returns do not apply when the K/H ratio stays constant. If the K/H ratio is constant then equation (5) is constant and equal to $\gamma^* = (1/\Theta)[A\alpha(1-\alpha)^{(1-\alpha)}-\delta-\rho]$.

positive but they still decrease during the transition period.[10] This also implies that γY is inversely related to K/H while K/H is below the steady state value $1/(1-\alpha)$. The model, therefore, predicts that the greater the imbalance is in the economy the larger the rates of growth will be.[11] However, this growth will not lead to convergence.

The graphical representation, *Figure 1*, depicts the growth rate γ_Y against the K/H ratio, which for the purposes of the Russian scenario is the starting point. The minimal growth rate, γ^*, corresponds to the steady state ratio $\alpha/(1-\alpha)$ and therefore, $\omega = (K/H)^* = \alpha/(1-\alpha)$. The middle point, ω^* is the optimal capital to labor ratio where the steady state equilibrium is reached. The right side of the graph is flatter since it takes longer to grow the depleted stocks of human capital. The premise is that it takes longer to educate a society than to build a machine, road or other forms of infrastructure. An inverse relationship exists between the rate of growth γ_Y and K/H. The farther left the economy is from ω^* the more human capital intensive an economy is and the farther to the right it rests the more it is physical capital intensive. Thus, on either side of the steady state, the growth rate rises systematically with the magnitude of the gap between the actual value of K/H and $(K/H)^*$.[12]

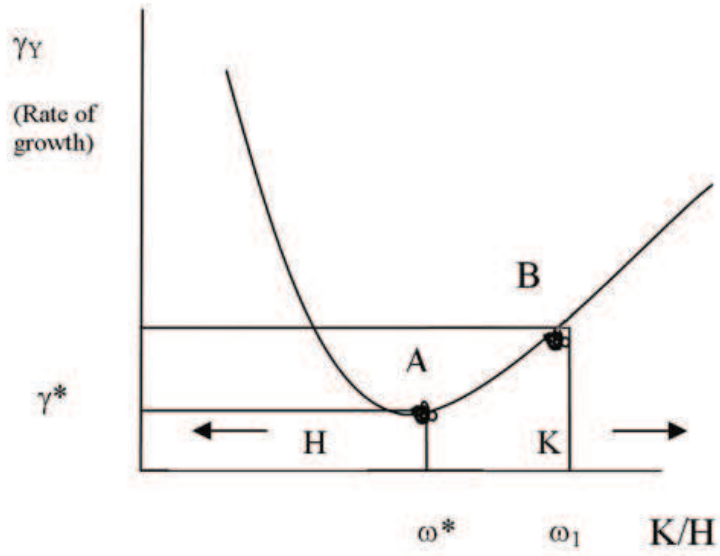

Figure 1: Russia's Growth Rate vs. K/H ratio in 1991 (ω^*) and present day (ω_1)

At the time of transition in 1991 the Russian economy was located at point ω^* the steady state equilibrium denoted by point A. Based on this model, one would expect Russia to be experiencing growth rates leading towards faster convergence in the world economy predicated on its human capital productivity and endowed infrastructure developed under communism. This point is emphasized by Rose when he writes,

10 K/H increases monotonically partly because H decreases at δ and because K subsequently increases. Therefore, MPK decreases and with it its rate of return.

11 The results will be analogous if the economy begins with an abundance of physical capital.

12 $\omega^* = K/H = \alpha/(1-\alpha)$

"[i]n its capital equipment and human capital, Russia today appears a modern society rich in natural resources. Nearly everyone in the labor force has at least a secondary education, three quarters of the population is urban, and telecommunications and transport link a population dispersed across eleven time zones." [Rose 1999: 5]

However, despite the high growth rates of well over 5 percent for the past half decade, Russia has not been experiencing a technological or human capital related growth boom. The puzzle naturally becomes why this has not happened. It would seem that all the requirements were there in 1991 within Russia: an ample stock of both human and physical capital. Yet, Russia has not experienced the sustained and convergence targeted growth predicted by the endogenous growth model. We turn to the evaluation of the historical progression of the economic reforms during the 1990's in an attempt to delineate why the model as it stands fails to predict the Russian case.

3. THE PUZZLE OF THE RUSSIAN ECONOMY AND THE CURRENT PROBLEM

Since 1991 government subsidization has indeed dissipated over the years, however, it has not led to a broad increase in investment or natural growth across an aggregate whole within the entire state in the areas originally predicted. In fact, as it will be shown, Russia has steadily moved away from its steady state growth rate through corrupt mismanagement of the economy and the institutions created to coordinate it.

All regions within Russia experienced the transition from communism at the same time and were endowed with seemingly similar stocks of human capital. Herrera states "[t]he one factor that is relatively similar across all subjects of the Federation is education, but levels of real income, unemployment, industrialization, raw materials extraction, exports, and urbanization all vary considerably." [Herrera 2005: 26-27] Unfortunately, as Herrera and others allude to, while state run conglomerates were privatized, the manner in which this occurred assisted in making the economy increasingly hydrocarbon reliant. The economy was forced away from other industries that may have benefited broad based growth and a human capital related growth boom relegating development potential to only one unsustainable sector.

Furthermore, in 1991 there were over a million state employed scientists scattered throughout research institutions in all regions within Russia. Today there are roughly half a million who remain in the field with an estimated 20–30 thousand emigrating abroad annually. This is due to the shear fact that the occupation has fallen from one of the highest paid in the country to the second to lowest after real average wages fell 30% almost overnight fueling the nation's 'brain drain'[13] [Mereu July 2002]. The features of the model previously presented, $K/H > (K/H)^*$ at point B

13 In practical terms, this means even those professors who work as department heads and maintain impressive research and publishing schedules may earn as little as $100 a month and postdoctoral researchers may earn only $60 a month.

in *Figure 1* demonstrate that Russia has moved away from its steady state growth, ω* over the course of the past decade. As the brain drain commenced, investment began streaming into the hydrocarbon sector. At the same time, Western markets endeavored to exploit Russia's need for hard currency and to satiate their own desire to secure a reliable energy market after instability rocked the Middle East [European Commission June 1996]. Increasingly, throughout this period Russia's focus on its human capital stock became narrowly focused upon oil and gas extraction skills.

In light of the current state of affairs, the model suggests that Russia needs to refocus its efforts on its educational resources while they remain relatively abundant if it wishes to experience sustained growth beyond the current oil boom predicated on inflated world oil prices. However, the answer is not simply to roll back the clock of physical capital development in order to return the economy to point A in *Figure 1*, but rather to increase aggregate investment in physical capital across the nation while matching this with a sustained development of human capital. Incentives for educated individuals to remain in Russia provided by the Russian government would help this cause. Nonetheless, targeted investment strategies and a fundamental reform of the embedded incoherent institutional arrangement need to be dealt with for Russia to succeed.

The source of the current disequilibria in the economy can be traced to the manner in which the privatization schemes of the 1990's unfolded. Unfortunately, as North points out, missing at the heart of the privatization campaign was the now essential notion that "...formal institutions such as impartial courts, police and commonly practiced laws must be in place [along with] informal norms and conventions" [North 1994: 361]. The result of this was a privatization campaign that, when undertaken, unfolded in a corrupt and somewhat incoherent manner – regardless of the best intentions of its originators, *Yeigor Gaidar* and *Anatoly Chubais*.

As the privatization campaign began, all Russian citizens were given vouchers which could be exchanged for shares as firms privatized. However, without the necessary educational campaign to make this policy effective roughly 37 million Russians simply exchanged their voucher for quick sums of money often equivalent to the price of a bottle of vodka [Goldman 2003: 88]. The result was that while privatization was initially meant to put the economy into the hands of the citizenry, it was consequently consolidated under control of a new 'nomenklatrua' and kept removed from the control of the people.

Moreover, a plausible rationale for the failure of reforms in Russia may be found in the perceived corruptive nature of a natural resource based economy. While there were indeed other factors at play "...with all its natural gas, oil and ferrous and non-ferrous metals, Russia had much to steal" [Goldman 2003: 96]. As a result, of "...all the wealth suddenly set aside for the taking, there were a small number of perspective Russians who saw what was happening and decided that they better take their share..." for themselves before someone else exploited it [Goldman 2003: 96]. The presence of natural resource wealth, coupled with the innate corruptible elements of the confused institutional arrangement and the lack of a capitalist knowledge amongst the people, exacerbated the steady decline of any desire amongst the people to seize upon the new capitalist ethic within Russia. This mix of apathy and

confusion fundamentally assisted in facilitating the move toward elite control of the economy.

Nonetheless, as referred to, in 1991 one would have thought that Russia would have been unique since it possessed a steady state level of human and physical capital at the time of transition. Instead, the corruptible elements of natural resource wealth tied to the flawed privatization campaign proved to be too overwhelming. Russia suddenly found itself with all the trappings of a market but without a commercial code, civic code, effective banking system, official steps for declaring bankruptcy, or conscious institutional understanding and coherence, and what was left were the remnants of a cheating state [Goldman 2003: 185]. The effects of this chasm between the oligarchs and the people did not lessen under President Putin's recentralization campaign of the economy during this decade. Rather, as Putin sought to bring the once privatized firms under the control of state planners, he all the while kept the economy away from public inclusion.

There are several long-term consequences of the 1990's privatization campaign. Foremost is the issue of the oligarchs, contrary to their American counterparts in the late 19th and early 20th centuries, these business leaders produced relatively little activity which led to the creation of new productive entities. In reality, "[t]he Russian oligarchs, unlike America's Andrew Carnegies, Henry Fords, Bill Gates, or even John D. Rockefellers, did not give birth to new enterprises or technologies" [Goldman 2003: 103].

As Russia fell prey to these business leaders, the state's enormous supply of natural resources helped to guarantee the immense corruption that resulted from the privatization of state industry. Continuing in this line, "[t]oo much was up for grabs and the rewards for unethical behavior were too high" [Goldman 1999: 74]. Increasingly, the economy became focused on the hydrocarbon industry under the control of the oligarchs, domestic and foreign investment took place within select regions where the oil sector, along with its correlated products, was abundant. Moreover, while it is true that the process of extracting these hydrocarbons is physical and human capital intensive, the workers who engage in this industry are skilled, well paid, but they are fairly small in number and they do not have any grand desire to expose any illegal or questionable business practices of their employers [Fish 2005: 128]. The result is a highly specialized, but small, work force without transferable skills consolidated in a single industry. Couple this with the 'brain drain' of human capital in the 1990's and it is no surprise that the Russian economy has moved from point A to point B, ω_1, in *Figure 1.*

At point B, the endogenous growth model indicates that the economy will still experience growth. However, within the Russian context this is not sustainable since oil and gas are finite and investors have been hesitant to give this sector the kind of continued investment necessary to avoid depreciation. This point is amplified by the fact hat the newfound strength of the ruble has begun to fuel inflation and undermine the competitiveness of the hydrocarbon sector resulting in inflation around 10.9 percent last year [Kramer April 2006]. If K decreases beyond ω^* nothing is there to stop it from declining further, and it will continue to move to the left in *Figure 1.* Investment is needed and can only be encouraged through the maintenance of good institutions. This assumption is based on the manner in which the

current state reconsolidation campaign has unfolded along with the continued Russian political developments in Eastern Europe seeking to force price liberalization through less than customary means.

Under the guiding hand of first oligarchic and then governmental pressure the economy has slipped from a steady state level of growth at point ω* to a larger but unsustainable rate of growth. This has happened because of an oblique privatization scheme along with malfeasance and misguided investment strategies which have neglected long term growth for short term financial gain. Accordingly,

> "...Russia did move from a full-blown, Soviet-style state control over the economy. The plan-and-command system began to wither during the late 1980's and underwent an unceremonious demise in the 1990's. But it was not replaced by a market economy. Instead, the reforms that Russia's post-Soviet leaders pursued spurred the rise of what may be dubbed a racket economy." [Fish 2005: 172]

The continued persistence of the institutional momentum behind the natural resource industry remains the key long term distraction for the aggregate economy. The inability of the state to promote and consolidate healthy and good economic institutions in order to replace the surprising rigidity of the old negative ones is at both times particularly illuminating and costly. The endogenous model would suggest that, if Russian policy makers are going to facilitate the country's move away from this physical capital intensive mode of economic growth in order to allow sustained development across the nation; it must first identify the correct balance between its endogenous stock of human capital and the corresponding necessary level of physical capital. Considering that overall Russia's stock of physical and human capital has not experienced the level of depreciation maintenance required to keep it functioning in the long term, the current physical capital intensive boom in many regions remains threatened. Sustained investment in both areas must become a priority. Second, the state must seek to foster coherent and substantial institutional reform and overhaul to bring the populace back into the economic system. Without the inclusion of citizen actors there is no incentive for human capital to remain at home. Rather, skilled individuals will continue to emigrate abroad seeking better opportunities as long as the Russian state cannot provide an adequate framework in which to work.

The subsequent section will seek to highlight the necessity of maintaining transparency, efficiency and coherence in Russia's economic and political institutions in order to rebuild trust in the system lost during the 1990's. This will ultimately be necessary to help replenish Russia's stock of human capital. In order to return the economy to a steady state growth rate the institutional nature of the economy must be resolved while coupling this with an increase in human capital development and a broad re-inclusion of the populace in state and market actions.

4. TRUST AND THE CONNECTION WITH INSTITUTIONAL DESIGN

The most pertinent lesson of the economic events of the previous decade is that fortified and transparent institutions are paramount if Russia is to solve its brewing

economic crisis. In contemporary Russia, however, bribery and other types of harassment have become rampant and expected elements of day to day life. Small businesses each year pay around $850 million in fees for different types of inspections and other requirements for official sanction, $400 million to various pet projects of the bureaucrats and $3.3 billion in 'bribes' to gain official license to use state property. The total cost of official harassment in the economy is around $4.55 billion which translates roughly into 1.6 percent of GDP, a remarkable number considering small businesses are essential to long term growth in any market based economy. [Fish 2005: 172] To the detriment of future economic potential, this has become one of the lasting legacies of the failure of rapid and aborted shock therapy and privatization in Russia. Human capital flight will continue and investment in physical capital will not increase in this type of business climate. Those individuals who may be inclined to remain at home for either communal, national or cultural reasons may end up being discouraged by the current system and emigrate elsewhere, taking the nascent entrepreneurial ethic with them which is fundamentally necessary to restore human capital creativity in the economy.

As institutional and bureaucratic incoherence was transformed into the prevailing *modus operandi* by which the economy operated, the gulf between the people and the institutions of government and the market grew ever larger. As Rose argues, out of the chaos of the early 1990's what arose in reaction to the top down efforts by the state to mobilize the economy was a confused society in which "...individuals often relied on informal networks and organizations to provide goods and services independently of formal organizations..." [Rose 1999: 5]. These organizations re-allocated the resources of public agencies to private consumers in a similar manner as they had done during the communist order outside of the purview of the command economy. Self-reliance as an economic necessity became ingrained in the populace while the state itself increasingly frustrated any attempt by the domestic agents to exploit their endowed stocks of human capital. This unfortunately facilitated the rise of the Russian mafia.

Unlike several of the other post-Soviet nations, notably Poland, Russian economic reforms failed to ensure a captive populace that once codified there would be substantial and perpetual benefits for the entire nation [Goldman 2003: 75]. Reforms were not sustained or corrected when errors came to light and consequently trust in the prevailing economic and governmental framework broke down. Rather, as the economic crisis worsened in the early 1990's then President Boris Yeltsin abruptly halted Russia's transition towards the institutional arrangement necessary for the consolidation of a free-market, subsequently stunting the institutional momentum behind the reform movement [Fish 2005: 174].

Unfortunately, after the collapse of communism the economic mentality of individuals and the government did not change with the new mixed economic model. The remnants of the aborted reforms act as,

> "...constraints that now dominate the scene in Russia ..., (which have) determined the structure of incentives faced by economic agents, and largely invalidated attempts at attaining desired results by such measures as price liberalization, privatization, macroeconomic stabilization, and opening up of the economy." [Braguinsky and Yavlinsky 2000: 9]

Moreover, the period of transition witnessed a solidification of past communist inequalities in income and budgetary transfers to the regions, which have since been used to prop up unsustainable and inefficient domestic markets, governmental projects and has unfortunately done little to instill trust in the new quasi market system [The World Bank 2005].

While some social scientists argue that the level of trust within a society is a key indicator to whether a nation can produce large scale cooperation in order to function productively, the concept of trust adopted here differs [Fukuyama 1995: 7]. In this context rather, a conceptual framework for trust in which, "[t]rust is important in many interpersonal contexts, but it cannot carry the weight of making complex societies function productively and efficiently" [Cook, Hardin and Levi 2005: 1]. In this sense, the role of trust is downplayed so as not to be seen as the glue that holds the system together but rather as the grease which, dependent on the case, may lubricate the institutional arrangement in order to help it to function. As a result, emphasis is placed on institutions and,

> "...other arrangements for ensuring the reliability that makes it possible to sustain complex markets, accountable and responsive government, and a wide range of social and organizational devices for managing conflict and improving productivity at the workplace and in society." [Cook, Hardin and Levi 2005: 2]

It is essential for policy makers to understand that if economic agents, i.e. the citizenry, are treated with respect this will bring about reciprocity - while distrust only evokes resistance, evasion and refusal to comply. Cook, Hardin and Levi conclude that if a government can establish this credibility, which is reinforced and conveyed through institutional arrangements that reward positive and beneficial interactions with people, this problem can be resolved [Cook, Hardin and Levi 2005: 162]. As Foley and Edwards put forward, trust is not necessarily a universal solvent, rather, effective government regulation is fundamental for cooperation and from this trust in the system will eventually follow [Foley and Edwards 1999: 168]. The challenge in contemporary Russia though is how the necessary actors can bring about this scenario. Otherwise, the current mixed regime of bureaucratic inconstancy and oligarchic rule will only continue and Russia's uneven growth will only become more skewed.

If Russia is to embark on a new path of reform, governmental funneling of the recent hydrocarbon led economic growth into the development and exploitation of domestic economic factors is a key first step. However, this must be buttressed by institutional reconstruction privy to an incorporated citizenry less a permanent downturn arises. Without the correct ratio between human and physical capital and a fundamental overhaul of economic institutions unhealthy economic growth rates will merely continue.

Overshadowing this is the fact that Russia has experienced a protracted transition period without a sense of normalization over the past 15 years. It is not surprising that as the government and the market failed to bequeath and sustain successful institutions, people increasingly relied upon pre-existing networks of trust that found their way into the underground economy thriving today. According to the *World Values Survey* published in 2000 more than half of the respondents believed

they could not trust the prevailing governing institutions [World Values Survey 1999]. In times of confusion and disarray individuals naturally turn to elements within society they know and trust, hence the power behind the Russian mafia. [Cook, Hardin and Levi 2005: 185]

The institutions codified during the transitory phase in both law and practice did not provide the necessary assistance mandated for the healthy maturation of the Russian economy and its citizenry. This type of path dependent result has allowed gross inequalities and feudal arrangements to solidify and retard the growth of market based systems.[14] Only through appreciating the causal weight attributed to the inception of the contemporary institutions at the time of the Soviet collapse, can the Russian government take advantage of the unintended consequences which have resulted in the form of anger and fatigue with the old order. Results of the *World Values Survey* indicate that, 70 percent of Russians responded that taking a bribe is 'never justified' under any circumstance [World Values Survey 1999]. Contrary to the common perception of Russian business life, the results of this survey indicate that there is "...no evidence that a culture of tolerance for graft prevails in Russia and that Russians are insensitive to corruption; just the opposite" [Fish 2005: 132]. While it may be true that some citizens have resigned themselves to operating under this framework, the data indicates that this in an extremely small minority, rather a growing majority cannot accept it.

Furthermore, a recent nationwide survey conducted between March 1 and 14, 2006 by the Levada Center, a well respected Russian statistical bureau, depicts a mixed scenario. The results indicate that more than half of the public view the present political situation as 'tense' and almost 85 percent hold the state of the economy to be 'bad' to 'very bad'. Furthermore, in response to questions on where the economy is going, more than half responded in the negative [The Levada Center March 2006]. The combination of these various statistical studies indicates that the Russian government has a momentous task before it if trust is going to be restored. However, the likelihood for reducing corruption in the system is hindered by the fact that in 2006 it was reported that the number of government bureaucrats rose dramatically and that it is now considered by most to be the most profitable businesses in Russia [Mereu 2006: 3].

The critical juncture that has been reached in Russia today, measured by the levels of dissatisfaction against the prevailing order, has presented itself as one of the best opportunities since the transition from communism in 1991 to reform the national order to better suit steady state growth. As Weingast contests the "...principal role of the constitution is to create a focal solution to the coordination problem so that citizens gain the ability to act in concert and police their government" [Weingast 2005: 105]. Increasingly, reinforcing institutions, seen as a bargain between society and government, have become the answer to the collective action dilemma presented by the seeming failure of endogenous growth theory to explain the current state of the Russian economy. Without these elements human capital flight will

14 The definition of path dependence is borrowed from James Mahoney and refers to it specifically as those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties.

not be reversed and the government will not be able to attract the investment needed to halt the current capital depreciation underway in the state. The economy will continue on at point ω_1 in *Figure 1* with widely divergent growth rates within the Federation and not lead towards a steady state growth rate and convergence in the international economy.

5. CONCLUSION AND POLICY RECOMMENDATIONS

Despite the gloomy scenario, steady state growth within Russia is not a foregone possibility, nor is it improbable to reach. By undertaking several steps at the institutional level to resurrect and recreate the contract with its citizenry, future growth can be encouraged based on the two key inputs into the endogenous growth model, physical and human capital.[15] Furthermore, the Russian people remain highly motivated and eager to learn, work, and regain the prestige they once had in the international environment.[16]

If Russia is going to exploit this comparative advantage it must; (1) initiate and support legislation which will provide transparency in business practices, and (2) ease the restrictions on private property, bureaucratic over regulation and oversight redundancies by the state. These first two steps will allow people the opportunity to regain trust in the institutional setup and provide the necessary economic opening for potential growth. (3) The state must increase investment in government sponsored education to replenish the loss of human capital and to provide incentives for individuals with potential to remain in Russia, and (4) foster an increase in investment in the form of foreign direct investment from other states' to ensure the viability of the nation's stock of physical capital, to allow for a replenishment of the depreciation that has taken place, and also for the possible diversification of industries with the potential to move the Russian economy away from one sector of growth.[17] Without these measures the Russian economy will not be able to move away from 1 and shift to a new level of steady state growth.

These reforms are fundamental to redirecting the path dependent institutional framework which has evolved, and to allow the necessary incentives to reverse

15 Future research into this area will incorporate the concept of property rights. Without well known and publicized laws providing the structural basis for an economic framework, new institutions cannot be created and trust will not be consolidated amongst the people. Property rights provide the necessary buy in to the political and economic system.

16 Lisa Pierce, vice president and analyst at the Boston based Forrester Research Group, attributes as an element of Russia's comparative advantage that, "[t]he labor costs are low and the talent pool is high, (and) the Russian work ethic and culture are very similar to that of the U.S." in Candy Gola, "The Next Frontier: Russia's Low-Cost Labor, High-Quality Talent Could Help Put in on the Map as an Outsourcing Hotspot," in *Johnson's Russia List,* #42 14 February 2006

17 The industrial slowdown in Russia has resulted in growth, but growth at half the previous rate. For example Russian GDP grew 6.4% in 2005 compared to 732 in 2004 and industrial output fell from 8.3% to 4%. The World Bank has released a report which has cited the dire need of investment within Russia, citing such examples as the advanced age of the country's electrical grid and other industrial necessities. in Andrew Kramer, "Russia Called to Reliant on Petroleum," *in Johnson's Russia List*, #9173, 17 April 2006

human capital flight and the possibility for eventual diversification of investment in Russia.[18] The political cost of non action by the Russian authorities may lead to the stagnation of the Russian economy further frustrating any attempts at reform and societal inclusion and the possible formation of public unrest.

Only by ensuring the continued abundance of human and physical capital and providing the bedrock of a foundation built upon institutional coherence and clarity can Russia embark on a new era of growth predicated on the assumptions within the endogenous model of growth. Unfortunately, the 2005 budget enacted by President Putin called for spending cuts in real or absolute terms in health, education and social security. Specifically, combined governmental spending on education declined from 122 billion rubles to 101 billion rubles. In absolute terms this represented a cut of roughly 20 percent [Mereu and Yablokova 2005]. This has caused analysts to further question the sustainability of Russia's growth. Furthermore, hallmarks of the now infamous 'Dutch Disease' appears to be present in the Russian economy. This type of pathogen is seen as,

> "...an ailment that affects industrial nations excessively engaged in export of raw materials. The disease becomes more acute as the export trade expands due to the soaring prices of the export commodities. Because of huge inflows of export proceeds, Russia's currency is appreciating against the foreign currency that has overfilled the state coffers. A cheap foreign currency means cheap imports, which give importers a competitive edge over domestic producers, who thus get in trouble." [Latsis June 2005]

In the end, if Russia is not careful the benefits of the booming oil sector will strangle the supportive manufacturing and raw material industries it has come to rely on. Moreover, human capital flight will not be reversed and a restoration of steady state growth rates will not be achieved.

18 Potential future research may move beyond the current one sector model of endogenous growth in Russia to the need to diversify the economy along the lines of a multi-sector model. However, at present, and predicated on historical fact, the one-sector model provides the best insight to the current situation.

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