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# Editorial: The economics of risk

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Vol.12 of The Mathematics Enthusiast addresses the notion of risk from a variety of viewpoints, mathematical or otherwise. This editorial examines risk, starting from a historical perspective to frame current educational policies that have been influenced by ensuing economic principles. Risk has historically been associated with numerous cultures in the context of dice games or gambling (Sriraman & Lee, 2014) .Risk was first empiricized in the financial sector during the advent of western colonialism in late 15th century when ships made voyages to the East and investors needed assurance about the risk associated in relation to the payout from a successful voyage. One sees the birth of maritime insurance during this period to address the needs of the mercantile sector which invested in risky shipping ventures. Another area in which risk was empiricized and calculated was in the domain of life insurance. It is well known among historians of statistics, that Edmond Halley in the 17th century constructed a life table to demonstrate how premiums can be calculated as a function of age. Even though the death of an individual was unpredictable, data on patterns of longevity for groups became a basis of study whereby risk could be more accurately assessed for the purpose of calculating premiums or pensions (Halley, 1693).

The economic dimension of risk in the 21st century is ubiquitous with existence in the developed world and forms the basis of neo-liberal economies and their associated markets. This ranges from auto-insurance premiums to investments made by governments for research, development and education. Educational reform in the U.S has been tied to risk as seen in the 1983 report from the National Commission on Excellence in Education under the auspices of the Reagan administration. The report entitled "*A Nation at Risk*" is often cited in the literature when addressing the failure of public schools and the need for reform in public education. It became somewhat of a pre-cursor for the private sector to intervene in public education since tax dollars spent on schools needed to be accounted for in terms of deliverable and measurable outcomes. Subsequent legislation in the form of "*No Child Left Behind*" (NCLB) enacted in 2001 held public schools accountable on the basis of student performance. The goal of this legislation was not only to reform public education but also to systematically close public schools that placed "students at risk" through probationary measures on the basis of student performance outcomes on standardized tests. By holding public schools and teachers responsible for inadequately addressing student needs, the onus of reform could be shifted to charter and private schools. One can argue that the increased role of the federal government in public education in the U.S has resulted in the marketization of public education by allowing the private sector to fill in the gap left by public schools. Funding initiatives such as the "*Race to the Top*" which were part of the *American Recovery and Reinvestment Act of 2009* furthered market economy goals of "competition" to put into place a reward system for states and schools that adhered to educational policies for schools anchored in performance based assessments and other measurable deliverables.

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A consequence of this has been a further increase in charter schools in states like Illinois and a demise of the public school system. In a neo-liberal economy such as the U.S the presence of free public schools can be viewed as an anomaly or even a thorn in market principles such as competition and performance based incentives. However the risk of sacrificing equitable public education through reform anchored on the principles of neo-liberalism have numerous consequences. Ambrose (2012) argued that

> *The "school reforms" promoted by neoliberal ideologues are punitive and lead to further socioeconomic segregation of students. Those from impoverished backgrounds must languish in schools that are being punished for poor results on superficial standardized tests while those from privileged backgrounds can enjoy more creative, engaging, and challenging forms of…[l]earning.*

On a much larger scale, assessments such as PISA (*Program for International Student Assessment*) reveal socio-economic inequalities within countries with students of lower socio-economic status (SES) performing poorly in comparison to their higher socio-economic status peers. This is particularly evident in countries with economies anchored in a neo-liberal ideology, and increasingly evident in countries that have adopted these principles. Aspects of international assessments such as PISA in terms of students at risk due to low SES have been the topic of much discussion within educational circles (Štrajn, 2014). While PISA reveals inequities of scores as a function of SES in countries such as the U.S, it is often viewed as an instrument of the Organization for Economic Co-operation and Development(OECD), an economic organization of mostly rich and developed countries, to influence national educational policies. The paradox for the U.S lies in the fact that left leaning educational theorists criticize it as an instrument of neo-liberal ideology from an economic organization, whereas conservatives view it as an instrument of social democratic principles imported from Europe! This begs the question, what does happen to students of low SES whose lives are governed by a larger economy of neo-liberal risk?

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