The triumph of Pareto*

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1. Introduction

Neo-classical economics (NCE),¹ or mainstream economics, is touted as a positive, "valuefree" science. Economic efficiency is defined by the criteria of Pareto optimality as if it were a perfectly objective, value free measure of efficiency. When looked at in depth we find that Pareto optimality is highly charged with underlying normative values, assumptions, and implications. In part one of this article I will explore the underlying meaning of Pareto Optimality (aka efficiency), and conclude that it is actually a normative criteria masquerading as "value-free". Part two explores the philosophies of Vilfredo Pareto, shows that they are entirely consistent with his principle of optimality, demonstrates their relationship to recent economic conditions, and concludes that his views and values have triumphed. Finally in part three, I will propose some solutions. Of particular relevance to Daly's work are the growth imperative and inequalities that result from using Pareto optimality as a measure of efficiency. Daly has long advocated for consideration of fair distribution in his work as one of the key principles of ecological economics, contrary to most of the economics profession, which has abandoned fairness in favor of growth.

1.1 Pillars of neo-classical welfare economics

The three pillars of neo-classical welfare economics are Homo-economicus – self- interested, utility maximizing, rational economic man; Perfect competition – independent actions of firms, no market power, constant returns to scale, perfect information, no uncertainty; and Pareto Optimality or Potential-Pareto Optimality (also known as the Kaldor-Hicks criteria). Behavioral science has convincingly refuted the premise of economic man (e.g. Tversky and Kahneman, 1981; Gintis, 2000; Kahneman and Tversky, 2000; Ariely, 2008; Thaler and Sunstein, 2008), while the "Nobel prize" to Joseph Stiglitz for asymmetrical information demonstrated the rarity of perfect competition. Though neoclassical economists have largely abandoned the assumptions of economic man and perfect competition in their empirical research, "the profession is just beginning to come to grips with the policy implications of abandoning Pareto optimality" (Gowdy and Erickson, 2005).

Pareto optimality is still the fundamental goal of neo-classical welfare economics. It says that a state in which no one can be made better off without making someone else worse off is Pareto optimal or efficient. However, Pareto optimality offers no guidance when confronted with a policy that lifts a million people out of dire poverty but imposes a minor loss on a single billionaire. Any policy alternative that makes anyone worse off in their own estimation, even while other people are made better off in their own estimation, are "Pareto incomparable." Since they fail the Pareto efficiency criteria they are by implication undesirable. Economics

^{*} This paper was originally written for the Festschrift honoring Herman Daly, which explains all the references to Daly.

¹ See Gowdy (chapter 6 in this volume) for a more detailed definition of neoclassical economics.

claims to be a "value-free", objective science. If this is the case, then widely used principles of economics, such as Pareto Optimality, should stand up to scrutiny as being value-free.

1.2 Pareto optimality in the view of economics

Mainstream economists refer to Pareto optimality as Pareto efficiency, or simply efficiency. No one is opposed to "efficiency". If markets guarantee "efficiency", then by implication they must be good: If we can make at least one person better off with no sacrifice, then shouldn't we do so? Mainstream economists obsess on the importance of diminishing marginal utility in the context of individual choice. However, they virtually ignore the implications of diminishing marginal utility in the context of income redistribution, and exalt Pareto optimality as the single criterion for economic desirability. Mainstream economists admit that there are an infinite number of possible Pareto efficient outcomes, with a different one for every possible distribution of wealth and income. How do we choose between them? Daly has argued that sustainability and distribution take priority over any measure of efficiency and therefore a Pareto efficient outcome will only be desirable if it results from sustainable levels of throughput and a just distribution of wealth and resources (Daly, 1992).

Efficiency in any technical field is normally defined by the ratio of output to input. Why choose Pareto optimality as the measure of efficiency? Pareto efficiency seems trivial compared to other measures of efficiency such as GDP per unit of energy, value of output per unit of labor (labor productivity), well being per unit of throughput, Genuine Progress Indicator (GPI) per unit of ecological footprint, and so on.

2. Problems with Pareto optimality

There are several serious problems with the use of Pareto Optimality as the central goal of economics. One of the primary implications of "Pareto Optimality" is that it accepts the current distribution of wealth as a given. If any income distribution can lead to an "optimal" outcome, there is no need to be concerned about just distribution. Mainstream economists generally make no distinction between earned or unearned income, and when they do, it is typically to recommend lower taxes on the latter, a policy that has been adopted in the USA. Mainstream economists rarely question the legitimacy of the source of wealth. Fairness or origin of the current distribution is a problem left to politicians and society. It is not considered a legitimate question for economics. As Steven Hackett points out, "Slavery was widely seen in the North as being unethical from a deontological perspective, but a policy alternative of ending slavery would make slave owners worse off than under the status quo, and thus would have failed the Pareto efficiency criterion" (Hackett, 2001: 26).

While Pareto developed his theory of Optimality, he also described the idea of "indifference curves" in conjunction with Edgeworth, which captures each person's preferences for different combinations of various goods. It established the idea of ordinal rather than cardinal welfare, and eliminated comparisons of utility between people. According to Pareto and current neoclassical orthodoxy, each person can only decide how well off they are "in their own estimation". This avoids any consideration of justice in the current social conditions. In the words of Daly, "The extreme individualism of economics insists that people are so qualitatively different in their hermetical isolation one from another that it makes no sense to say that a leg amputation hurts Smith more than a pin prick hurts Jones" (Daly and Farley, 2010: 306). Economics was originally based on classical utilitarianism, which followed the philosophy of "the greatest good for the greatest number", and thus was very concerned with issues of distribution. Maximizing the total utility of society was the goal, and it was well understood that extra income provided more utility for a poor person than for a rich one.

Following Pareto, this was abandoned in favor of ordinal measures of welfare. Interpersonal comparisons of utility are still generally considered outside the bounds of neo-classical welfare economics.

Utility curves of an individual assume diminishing marginal utility: the more of something a person has, the less utility an additional unit provides. Figure 1 below depicts the difference in utility from receiving \$100 for a person with \$1000 compared to the same person with \$0. Is it really so far-fetched to believe that two human beings might have similar utility curves, especially when satisfying basic physiological needs? If this curve represented two people, rather than one person at different times, then the wealthier person obviously gets less utility from \$100 than the poorer person. Economists can only accept Pareto efficiency as a central goal of economics by largely rejecting the notion of diminishing marginal utility.

Therefore Pareto Optimality is self-contradictory.

Utility A teeny, tiny happiness boost A big happiness boost \$0 \$100 \$100 Money

Figure 1 Interpersonal comparison of Utility

Source: http://mrski-apecon-2008.wikispaces.com/Sun%27s+Page.

One of the primary implications of Pareto optimality is that economists cannot pass judgment on the desirability of different distributions of wealth and income. "Potential Pareto optimality" relaxes this criterion by declaring one option superior to another if the winners could potentially compensate the losers through transfer payments, even if no compensation actually takes place (Kaldor-Hicks criteria). Actual compensation is left to society to take care of and is out of the realm of economics.

Economists' obsession with Pareto optimality has led them to virtually ignore the welfare implications of upward and downward redistribution. If redistribution of the pie is considered off-limits, then the only option left for improving welfare is a bigger pie, typically measured by higher GDP. Also, since the measure of welfare is entirely subjective, how could one determine who feels better or worse? It's much safer to assume that a rising tide lifts all boats, and don't worry about the people with no boats. It is universally believed that we can grow our way out of poverty. Does reality support the myth? Prior to 1967 the poverty rate appeared to

decline as GDP increased. However, as shown in Figure 2, since 1968 there has been no relationship between long term GDP growth and poverty alleviation as is commonly believed.



Figure 2 Poverty rate vs GDP

Source: Author from US Census Bureau data, 2014.

Even if growth did contribute to poverty alleviation it is questionable if it is a viable option any longer due to the limits of planetary growth. It would require an estimated 4.5 planets to extend current levels of US consumption of resources and emission of pollutants to all 7 billion people on the earth (Ewing et al., 2010).

3. Pareto's other philosophies, their connection to Pareto optimality, and to current social conditions

In order to understand the genesis of Pareto's principle of optimality it is important to realize that this principle did not emerge whole cloth in isolation, but was a reflection of his deeply social Darwinist views. The overwhelming dominance of neoclassical market economics in modern society, particularly in the US, therefore affected other attitudes and policies in our society, and getting economists to accept Pareto optimality paved the way for the triumph of Pareto's ethical values. In adopting Pareto Optimality, economists unleashed a hidden principle driving society toward ever-increasing inequality. Since the official end of the recession caused by the financial crisis, the top 1% of income earners captured 95% of the income gains and now earn over 20% of the total income, with the top 10% receiving over 50% of total income (Pikkety and Saez, 2006).

This section of the paper therefore examines Pareto's moral philosophy, and assesses the extent to which it is reflected in the American economy. In 1916 Pareto wrote what he considered his greatest work, *Mind and Society*. In this work he elaborated his sociological theory of the "Circulation of the Elites". Persons of superior ability actively seek to confirm and

aggrandize their social position. The best-equipped members of the lower classes rise to challenge the position of the upper-class elites. This theory best captures Pareto's social Darwinist beliefs, and also corresponds with recent economic history.

The period of 1980-2008 was one of the longest sustained periods of economic growth in US history. It included a period of neo-liberal supremacy after the demise of the Soviet Union. A huge increase in economic and social inequality also occurred during this time. A combination of factors led to this result. Because of the demise of the communist system, the promoters of capitalism now had "proof" that their system was better and celebrated the "End of History" with the emergence of free market democracies as supposedly the best possible system (Fukuyama, 1989). Free from a countervailing adversary, neo-classical economists, in conjunction with neo-liberal business and political interests, were given free reign to promote their agenda in advocating free-trade, globalization, structural adjustment, corporate downsizing, elimination of the social safety net, destruction of unions, privatization, etc. How did it work out? Pareto's other principles offer a lens through which to evaluate the results of the neo- classical economic (neo-liberal political) resurgence from 1980 to present.

3.1 Pareto on social class

"...no social class can for long hold its property or its power if it does not have the strength and vigor necessary to defend them. In the long run only power determines the social forms; the great error of the 19th century will be to have forgotten this principle" (Pareto, 1906: 361, cited in Gaffney and Harrison, 1994).

Pareto was certainly a supporter of class warfare, the right of elites to control property, and the primacy of power over other social considerations such as justice or equality that are espoused by democratic societies. Let's examine the evidence of income and wealth distribution by economic class, to see if it is consistent with this principle. The first factor we can observe since the 1980s is the concentration of US wealth held by the top 1% of the population. It reached 40.1% in 1997, its greatest level since just before the stock market crash of 1929, when it reached 44.2%. Concentration dropped slightly due to the dot.com crash around 2000, but trended upward to 34.6% until the financial crisis of 2008. After the crash the trend continued up to 35.4% in 2010 (Figure 3). This was due in large part to stock market gains going mainly to the wealthy, but also correlated with increasing disparities in income and benefits, tax reductions, and other factors. Certainly, control over approximately 40% of all wealth would appear to give the top 1% the strength to defend its property and power.





In terms of income we see a similar story. The top 10% of society was able to exceed 50% of the total income share in 2012 (Figure 4).



Figure 4 The top decile income share, 1917-2012

Source: (Piketty and Saez, 2006; Saez, 2013). For more information on trends in the distribution of wealth and income, see Atkinson et al. (2011); Alvaredo et al. (2013).

Pareto further claimed that:

"the dominant class A has an alpha part with still enough strength and energy to defend its share of authority; and a beta part made up of degenerated individuals, with feeble intelligence and will, humanitarians, as is said today...Objectively, the struggle consists solely in the B-alpha trying to take the place of the A-alpha; everything else is subordinate and incidental" (Pareto, 1927: 91, cited in Gaffney and Harrison, 1994).

Pareto explicitly describes a patriarchal battle for dominance as the existing and desirable state of society. While admiring the elite, Pareto also somewhat admired the self-seeking B-alphas, leaders of the lower classes who seek to overthrow the upper classes. Pareto's "Circulation of the Elites", to anyone who has studied primate behavior, is nothing but a description of the dominance hierarchy of chimpanzee society. Alpha males (A-alphas) rule, and are constantly challenged by beta males (B-alphas) for dominance. Despite the wide variety of primate and human societies throughout evolutionary history, including matriarchal and matrilineal societies, and egalitarian Neolithic and tribal societies, Pareto holds Chimpanzee society up as the human ideal. Even among apes, chimpanzees are more aggressive and hierarchical compared to others such as Bonobos or Orangutans. Is chimpanzee society what we aspire to as human beings?

3.2 Distribution of wealth 1947-2013

Additional evidence on income distribution reveals that the "Circulation of the Elites" is consistent with recent history. While real family income grew fairly equally across the board from 1947-1979 (Figure 5), in the period from 1982-2006 inequality vastly increased (Figure 6). The gains increased with increasing income, and those at the top increased their already much higher income by 16 times as much as those at the bottom. This is considered Pareto "efficient" since no one received less income. Yet do we consider this outcome desirable? It appears to be exactly what Pareto had in mind. In household net worth, the situation was even worse. People at the top got better off, while people at the bottom got much worse off, therefore failing the Pareto efficiency criterion (Figure 7). During these years we heard much about "irrational exuberance", and little or nothing from economists about wealth or income inequality. We certainly heard nothing about the decline in household net worth of the bottom 40% of society as a violation of Pareto efficiency. Evidence suggests economic growth in recent decades has made the rich richer and poor poorer. If Pareto efficiency is our sole criterion for judgment, we cannot say whether such growth is good or bad, while the Kaldor-Hicks criterion of potential Pareto efficiency says that aggregate growth is good no matter how unequal the distribution.



Figure 5 1947-1979 Real family income growth by quintile for top 5% (Collins, 2000)





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3.3 Pareto on genetic selection

"The struggle to appropriate the goods of others may be favorable to (genetic) selection" (Pareto, 1906: 341).

CEO pay reflects this principle as corporate management in the US drastically increased its share of corporate income from 1980-present. We have heard the justification from Wall Street that CEOs are the "Job creators", and that "they need high salaries to recruit good people", and that CEO pay reflects performance. But this is all very self-serving as CEOs received huge bonuses even while their companies stock prices were dropping drastically in 2008, or going bankrupt. From 1980 to 2000 the ratio of CEO pay to the average worker increased from 42:1 to 411:1 (Figure 8). Though the ratio of CEO to worker pay in the US dropped to 209:1 in 2009, it has since rebounded to 354:1 according to the AFL-CIO (2013). Many other countries such as Germany and Japan are also experiencing dramatic increases in the ratio of CEO to worker pay, but starting from a much more equal base (Khazan, 2013).

Labor productivity increased eight times faster than pay during this same period of time, 1979-2013 according to the Economic Policy Institute (Figure 9). According to neo-classical economic doctrine, wages always rise in proportion to labor productivity. From 1972 onward, there was basically no corresponding increase in wages. Real wages remained virtually unchanged. CEOs appropriated huge increases in compensation from increased productivity while giving their employees nothing, in keeping with Pareto.

Much of Pareto's writing suggests that he would exalt the CEOs position and be contemptuous of the passive masses who accepted this condition. Several important factors led to the stagnation of real wages in the US:

- The decline in unionization from 35% in 1948 to 14% in 1999.
- The export of jobs due to globalization and a "race to the bottom" for wages (Daly and

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Goodland, 1994). (Free-trade zones, NAFTA, WTO, etc.)

- Increased temporary and contract workers with no benefits
- Layoffs resulting from corporate downsizing and mergers.
- The loss of manufacturing jobs.

Figure 8 Ratio of US CEO pay to average worker



Source: Economic Policy Institute (http://www.epi.org/publication/the-top-10-charts-of-2014/)

3.4 Pareto on suffrage

"When suffrage has been given to all men, including madmen and criminals, when it has been extended to women, and if you like, to children, it will have to stop. One cannot go any lower, unless the suffrage is extended to animals" (Pareto, 1906: 100, cited in Gaffney and Harrison, 1994).

Aside from being a social Darwinist, Pareto was also a misogynist. Is it surprising that economic statistics show that women suffer the most from economic deprivation in a culture where economists follow Pareto's principles? Women, children, and single parent families are most often the victims of hunger. In 2001, 60% of adults seeking food assistance were women, and more than 40% of the total were children (Gazette Community News, 2001). Poverty has risen since 2001. In 2010, 58.7% of single mothers with children under 6 were poor, and 34.2% of all women-headed households were poor (Figure 10). Pareto's goal of disenfranchising women and children has been achieved.

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2010	All families	Children <18	Children <6
All families	13.2%	21.5%	25.4%
Married couple	7.6%	11.6%	13.3%
Male householder, no wife	17.3%	28.1%	32.2%
Female householder, no husband	34.2%	46.9%	58.7%

Figure 10 Poverty among families and children

Source: Author from US Census Bureau data 2012.

3.5 Pareto on equality

"Equality before the law is a dogma for many people...it is not at all evident a priori that such equality is advantageous to society;...the contrary appears more probable" (Pareto, 1906: 95, cited in Gaffney and Harrison, 1994).

Pareto's belief that inequality is good for society seems to be shared by neo-classical economists. Mainstream economics over the last several decades have espoused the belief that inequality is necessary because it provides incentives for economic growth. Furthermore, they claim that inequality is the natural state of society and that to oppose it would be against natural law. On that basis they have opposed policies such as increasing the minimum wage, and ignored the fact that lower income people have a higher propensity to spend and hence to stimulate economic activity. Therefore, economists have fostered a tolerance for the extreme disparities in wealth that we see today. There has been extensive recent experience with inequality as it has rapidly increased over the last several decades. So we can evaluate the results empirically to test Pareto's theory that inequality is good for society.

The Gini coefficient is a commonly used measure of income inequality. While declining slightly prior to 1968 in the US, it has been rising dramatically since then (Figure 11).



Figure 11 US Gini coefficient

Source: Author from US Census Bureau data 2014.

Is inequality good for society?

The notion that inequality is good for society, although espoused by neo-classical economists and neo-liberal (US conservative) politicians following Pareto, has been utterly refuted most recently by the book "The Spirit Level". Authors Wilkinson and Pickett (2009), found that numerous indicators of health and social problems, including trust, mental illness, life expectancy, infant mortality, obesity, children's educational performance, teenage births, homicides, imprisonment rates, and social mobility are all made worse by inequality. They found this correlation to hold both between countries and between the 50 US states. Furthermore, the greater the degree of inequality, the worse the outcome as shown in the following charts.

Surprisingly, health and social problems show a weak inverse correlation to average income among similar countries, but strong positive correlation with inequality:



Figure 12 and Figure 13 Source (Wilkinson and Pickett 2009) THE SPIRIT LEVEL



3.6 The triumph of Pareto, economic growth, and welfare

In the last 30 years we have seen the implementation of Pareto's values through laissezfaire, free-market capitalism as promoted by neo-classical economists and neo-liberal advocates. We have seen a huge redistribution of wealth and income from the lower income groups to the upper income groups. The greatest poverty is among single women and children. Nonetheless, there seems to be a growing belief that downward redistribution of any kind is considered morally repugnant.

Remember, Pareto considered humanitarians who want to share wealth equitably to be "degenerated individuals". The economy grew, but inequality grew much greater. It is truly the triumph of Pareto.

The response of mainstream economists to this growing inequality has been to call for yet more growth to reduce poverty and inequality. As this article illustrates, economic growth and poverty reduction, in the US at least, are completely unrelated. Furthermore, it is debatable that growth in material throughput is sustainable for much longer. The most effective way to increase the total utility of society is to provide for the material needs of those with the greatest marginal utility from increases in income, namely those at the bottom of the economic scale.

How to go about this is an essential question.

4. Policies to address poverty and inequality

Given the political difficulty of a Robin Hood tax-the-rich and redistributed downward scheme, perhaps the best way accomplish to reduce poverty and inequality is through the sharing of rent from the commons² Many policy recommendations have been made to address poverty that do not necessarily require additional economic growth. They include higher and more progressive taxation, eliminating the cap on payroll taxes, negative income tax or basic income, refundable care-giver tax credit, affordable housing, universal health care, income deductible rent, and so on. Many recommendations addressing inequality are based on a Robin Hood approach, transferring wealth from the rich to the poor. Debates usually deteriorate into unproductive and divisive arguments between supporters of downward redistribution and opponents. Advocates seek to remedy the injustice of the current inequality of wealth, while opponents consider it unfair to confiscate and redistribute what they consider private wealth, and consider it a deterrent to initiative and productivity.

4.1 Addressing inequality

A better approach to inequality would be to make a distinction between those assets that are created by private effort and those which are inherently common property, namely those assets produced neither by individual labor nor by capital. Every person shares a common inheritance of natural and cultural assets. These assets contribute actual or potential dividends to everyone on Earth. Justice requires that contributions to welfare from natural capital and the shared cultural heritage of humankind should be equitably distributed among all, while the value added to these assets by individual or collective effort (labor or capital)

² See Cobb (chapter 10 in this volume) for a more detailed discussion of economic rent.

should belong to the individuals who contributed that value. Daly has repeatedly argued that taxing low entropy matter and energy inputs to the economy is preferable to taxing value added by labor and capital (Daly, 2007). Actual and potential dividends can be computed on a per capita basis for ecosystem services, human and social services, and rent on natural and social assets. For the purposes of redressing inequality I will focus on rent from natural common assets.

4.2 Equity from common assets

Many resources cannot be assigned individual property rights and are inherently public, such as climate stability and the ozone layer. It is however possible for individuals to destroy them. A number of other resources created by nature can be privately owned, but were traditionally shared by communities, often with explicit rules or norms that limited the amount of resource that any individual could use. Examples include grazing rights, fishing rights, and the right to collect firewood from public lands. The enclosure movement, beginning in England in the 17th century, converted many of these common property rights into private rights (Bollier, 2002). Mainstream economists frequently claim that common property resources are poorly managed, resulting in overuse and a "tragedy of the commons", and therefore should be privatized, though abundant evidence shows that common property institutions can sustainably manage such resources for millennia. Lack of property rights is the problem, not common property rights (Bromley, 1992; Ostrom, 2002). New technologies frequently create whole new types of resources, such as the electromagnetic broadcast spectrum, aircraft landing rights, orbital satellite slots, the Internet and other products of government research, and genetic information. New institutions can also establish ownership rights to previously unowned resources, such as cap and trade permits for emissions of pollutants such as sulfur dioxide, NO₂, or carbon dioxide, CO₂. Both new resources and newly created property rights raise the important question of to whom these resources should belong. Following the advice of mainstream economists, most of these resources have been turned over to society's wealthiest individuals and corporations, even though when public enforcement of private property rights is very expensive. A more just alternative would be to retain rental values on these assets, as well as charges for harm done to them, as citizen equity.

4.3 Equity from natural capital

UN Resolution 1803 (XVII) of 14 December, 1962/ Declaration of Permanent Sovereignty over Natural Resources states:

"Violation of the rights of peoples and nations to sovereignty over their natural wealth and resources is contrary to the spirit and principles of the Charter of the UN, and hinders the development of international co-operation and the maintenance of peace."

Another view:

"The meek shall inherit the earth... Except for the mineral rights" J. Paul Getty.

An existing model of citizen equity in natural capital, combined with weak sustainability³ currently exists in the US state of Alaska. Oil resources in Alaska belong to the people of the state. The severance tax rate on oil is 12.25%-15% of extraction value depending on the age of the oil field, and 10% on natural gas. Royalties paid by oil companies drilling in Alaska are partly used for state revenue, but a large portion is placed in a permanent fund (APF), which is invested for the benefit of the citizens of Alaska.

Without depleting the capital fund, interest is paid as an annual dividend to every resident of Alaska who has lived in the state for more than one year. Payments have averaged over \$1000 per year in recent years (Figure 14). This illustrates the transformation of natural capital into a sustainable stream of financial capital. As state oil resources are used up, the citizens of Alaska will still have a large and growing capital fund earning interest for them (Figure 15). This will continue indefinitely as long as the fund is managed well, and the state government is prevented from spending the fund.

The APF is one of the few cases in the world where property rights to natural capital have in essence been equally distributed among all citizens. Governments usually retain rights to these resources, and revenues are used for general government expenditures, or quite often end up in the bank accounts of government officials, especially in authoritarian regimes. Under the Bush administration oil companies in the Gulf of Mexico were given a waiver on paying royalties to the government (Andrews 2006). These tax breaks were upheld in Congress as of April 4, 2012. By establishing citizen equity to common assets and natural capital, these benefits will accrue to the population at large, rather than to government officials and their associates, or to corporate owners. What does the Alaska Oil dividend have to do with equity? It turns out that Alaska has the lowest Gini ratio of any state in the US at .40217 (2000 census figure).

		1990	\$952.63	2000	\$1,963.86	2010	\$1,281.00
		1991	\$931.34	2001	\$1,850.28	2011	\$1,174.00
1982	\$1,000.00	1992	\$915.84	2002	\$1,540.76	2012	\$878.00
1983	\$386.15	1993	\$949.46	2003	\$1,107.56	2013	\$900.00
1984	\$331.29	1994	\$983.90	2004	\$919.84	2014	\$1884.00
1985	\$404.00	1995	\$990.30	2005	\$845.76		
1986	\$556.26	1996	\$1,130.68	2006	\$1,106.96		
1987	\$708.19	1997	\$1,296.54	2007	\$1,654.00		
1988	\$826.93	1998	\$1,540.88	2008	\$2,069.00		
1989	\$873.16	1999	\$1,769.84	2009	\$1,305.00		

Figure 14 Permanent fund dividend 1982-2014

Source: http://www.apfc.org/home/Content/dividend/dividend.cfm

³ Weak sustainability is the belief that natural and human made capital and completely substitutable, and sustainability requires only non-diminishing quantities of total capital. In contrast, strong sustainability requires non- diminishing amounts of natural capital.

Figure 15 The relationship of fund income to state oil revenues: past and future. Alaska Permanent Fund Corporation "Fund Works", 2007



Source: http://www.housemajority.org/coms/hfsp/pdfs/CWN PF Study.pdf

5. Conclusion

Pareto Optimality is consistent with Pareto's other writings that are explicitly social Darwinist, advocating "survival of the fittest" in the human economy. Use of this principle in neo-classical economics and calling it "value-free" is inconsistent with reality if not deceitful. It contributes to inequality in society and the constant call for economic growth. Ecological economists such as Herman Daly are correct in questioning Pareto Optimality as a measure of efficiency. "Efficiency" could just as legitimately be measured by reductions in the Gini coefficient, which with all else equal would be likely to increase the welfare produced per unit of output.

Redressing the vast inequities in wealth created by the triumph of Pareto does not require a transfer of "hard earned" wealth from the rich to the poor. A better way would be to distribute common assets, which do not involve confiscating anyone's rightfully earned property.

Distributing dividends universally from natural and social assets such as minerals, land, and the electromagnetic spectrum might be relatively trivial to those at the top of the income scale. To those at the bottom who receive much greater marginal utility from small increases in income, these dividends could make a significant difference. The reduction in inequality that results, as demonstrated by Alaska, could reduce the perceived need for economic growth. It might also achieve the common good for the many as advocated by Daly, rather than the private good for a few as advocated by neo-classical economists following Pareto.

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