The Makeup and Breakup of the Middle Class: The Biggest Shift in the Structure of the Global Economy That No One Noticed

Sagit Azary Viesel [1]
&
Itai Sened[2]

Abstract

The recognition of the significance of the middle class for the makeup, strength and prosperity of societies goes back to the writings of Aristotle. The effects of the strength or weaknesses of the middle class on the economics and politics of society is one of the oldest topics in political economy. Following the financial crisis of 2007-8, the subject has come back to occupy a central role in the discussion of the economic recovery in OECD countries, but did not receive the scholarly attention it deserves. In particular, there is no established theory as to why the middle class may make any difference at all and the measurement tools used to measure the size and the strength of the middle class are quite basic. In this paper we develop a theory as to why the middle class may play such a central role in the welfare of societies. We move on to articulate what we believe to be a more adequate definition of what it means to belong to the middle class, compared to currently used definitions in the literature. We operationalize this definition and articulate the use of Latent Class Analysis as a useful methodology that we apply to examine a rich data set that the government of Israel has made available to researchers for this purpose.

Key words: *middleclass, property rights, income, measurement.*

[1] Tel Aviv University, Tel Aviv, Israel
[2] Tel Aviv University, Tel Aviv, Israel

Who and What in the Middle Class?
Going Beyond Income Distributions

> *"Thus it is manifest that the best political community is formed by citizens of the middle class, and that those states that are likely to be well-administered in which the middle class is large, and stronger if possible than both the other classes ... "* (Aristotle, *Politics,* 1984 (350 B.C.), Book IV, 11th, *1295-6).*

The interest of scholars in the role of the middle class in the welfare of societies goes back centuries and millennia. Yet, the middle class, as we know it today, is a relatively modern phenomenon. Most notably, following the great depression of the 1930th and the devastation brought upon the developed world due to World War II, brought governments in the western hemisphere to restructure their societies in the hope of helping them emerge from this sequence of devastations. Probably most famous and well documented amongst those efforts, that shared many common features, was the gigantic effort of William Beveridge at the reconstruction of Britain's economy following WWII. In his lucid and often time blunt style, he defined his effort as combating the "five giant evils" of "want, disease, ignorance, squalor and idleness" (Timmins, 2001). To do so he recommended a new structure of national economies that has come to be known as the welfare state. This *structure* of national economies, in the Northian sense of the term (North 1982, 1990), dominated the western welfare states, including the U.S. for the next four or five decades. It is important to emphasize that Beveridge was not the only architect of this *structure*. He was not the sole inspiration or most dominant influence, bringing it about. Parallel to his effort we see around the same time very similar efforts that may have had little to do with his insight or inspiration. Most famous amongst them, is FDR's "New Deal" set of legislations and executive orders that may have had little to do with Beveridge insight but created a very similar *structure* that granted and protected rights to the middle class that included access to health care, education, work related benefits, housing and pensions (Rauchway, 2008).

It is very hard to estimate the actual pros and cons of this economic structure let alone generate a rigorous legacy of its successes or lack thereof. We do know that the *welfare state structure* was the dominant political economic structure for four or so decades and faired quite well. Yet, the end of the 20th century brought about a very distinct change in the structure of society and government. Some historians classify it as "The Age of Fracture," where the ideology shifted to sharply transform the conceptual foundations of society (Rodgers 2011). The Thatcher Administration in London and the Reagan Administration in Washington D.C. had a sincere and deep disdain to the *welfare state structure* and were quite successful, with a lot of help of many others, in dismantling it forever (Harvey, 2005). While other OECD countries have gone through much more nuanced processes of dismantling the edifices of the structure of their welfare states, they eventually came along to adapt structures that significantly compromised the structure of the welfare state, thereby significantly diminishing the size and strength of the middle class. The irony of the story is that the middle class was such a force in pushing the process, noticing way too the price they paid for this remarkable restructuring of almost all of the economies of the western world as we know them today.

Eventually, larger and larger segments of society and, significant among them, the middle class of OECD countries have come to realize the visible flaws and the price they pay for so eagerly accepting and adopting the neoliberal approach as the guiding principle of modern structures of society. In 2011 global outcry was heard, from the American Occupy Wall Street movement to the housing protests in Tel Aviv. The wellbeing and strength of the middle class continues to be a selling point for politicians. The five giants that Beveridge feared in 1942 have not changed drastically, as poverty, healthcare, education, housing costs, and unemployment

remain key concerns today. Despite this vested interest in the middle class, rigorous scholarship of the subject has been sparse. This neglect is due to weak theoretical foundations and the methods, most commonly used by most economists to measure the strength of the middle class, almost invariably, by different cut-points of income distributions. This paper is intended as a contribution on both dimensions of the research on the issue. In the next section we provide a theoretical foundation for the study of the middle class as a socio-economic phenomenon. We then draw from this perspective, several derivatives of why the middle class is conducive to social and political strength, stability and prosperity.

After articulating what the middle class may consist of and why it may play a significant role in the well being of society, we articulate a methodology of assessing its size and strength that is based on the theoretical foundations set up in the next section. This measurement strategy allows us to provide empirical support to our theoretical claims and a measurement tool that is more adequate to assess the strength, size and vulnerability of the middle class. Once we have a theory and measurement strategy to study the middle class we can move forward to the important analysis of how vulnerable individuals who belong to the middle class may be to different shocks, public policies and trends.

The merit of this approach lies amongst others in the heuristic it provides to deal with challenges that the middle class in the developed nations constantly faces. The existing approach that relies so heavily on cut-points in income distributions gives us little if any help in devising policies to strengthen or sustain the middle class. We know that more and more members of this class are slipping into what we refer more generally as the 'decline of the middle class.' Some argue that this decline leads them into a new 'lower middle class' status (Nisanov, 2014). Others have claimed that this decline thrust them into poverty (Lama and Sened, 2015). Whatever the case may be, the current, theory thin, and empirically flawed strategy of scholarship, based on observing the declining income of the middle class has somewhat limited range of applications. In contrast, our approach that measures and understands the middle class in terms of measurable theoretical foundations, offers strategies to deal with the decline.

Our current research refines a theory and a measurement tool to answer three research questions:

- Who is in the middle class?
- What are the characteristics that define the demarcation lines that separate the middle class from the poor below and the rich above?
- What are the important vulnerabilities that threaten the middle class fall into poverty and what are the agents of upwards mobility that may help the poor rise to the middle class?

The goal is to come up with a high precision diagnostic tool to identify the demarcation lines, the bridges over these lines and the policies that may be most helpful in each and every case.

1. Who and what in the middle class: A Largely Inexistent Theory

The theoretical scholarship on the essence and logic behind the strength, or lack thereof, of the middle class are somewhat weak. One reason for this neglect may be attributed to the absence of a clear distinction between the structure and the performance of the economy (North, 1981, 1990) and the off-hand treatment, in neo classical theory, of structures of property rights and their distributional effects (Sened, 1997).

The neo-classical school of economics acknowledges the importance of property rights in well functioning markets, but for too long has tried to explain their origin from within the framework of the 'friction free' competitive market (Demsetz, 1967, 1982). In the 1980's, a significant effort was aimed at establishing a 'spontaneous' theory of the emergence of property rights (Sugden, 1986). In 1990's, however, self-enforcement of property rights was shown to be unlikely in most realistic environments. Even relatively small groups cannot hope to sustain self-enforcement of property rights structures (Calvert, 1995). At the same time, governments were shown to be rather reliable enforcers of property rights under a wide range of conditions (Sened, 1997). One possible explanation for the strength or weakness of the middle class can be found in a 'property rights' theory of the middle class, which we articulate below.

The essence of the middle class can also be explained in terms of values that converge to certain patterns of behavior. In particular, the rich may not need to worry too much about a lot of things the middle class may need to worry about such as job security, health and education attainments to give them a relative advantages in labor markets. The poor may not be able to afford these worries. They may be too preoccupied with day to day, or month to month, survival. This significant difference between what matters to a certain class of people may lead to a value structure that may imply behavioral patterns.

A third option is to explain the middle class in terms of consumption patterns. The middle class does seem to have consumption patterns that are different than other classes (Banerjee and Duflo, 2008). But where do these consumption patterns come from?

We articulate the logic behind these three theories in the order we introduced them and combine all three in one coherent theory that we hope will serve well this and future research.

1.1 A Property Right [PR] Theory of the Middle Class.

Piketty (2013) argues and illustrates the intrinsic drive of historic economic regimes to increasing levels of inequality. In passage, he notes that the 1930 – 1980 period experienced a significant reversal of this trend. Piketty highlights a combination of what he believes were idiosyncratic reasons associated with the two world wars and the great depression between them that led to sweeping redistributive policies that reduced centuries' long drive to increased inequality. But what were the policies used to that effect and how did they reduce inequality and reversed the general trend? Piketty and others seem to have overlooked the fact that at the heart of all of these policies were significant government grants of property rights[1] that benefitted the middle class, providing them with cheap and affordable housing, healthcare and education on the one hand and job security and secured pensions on the other.

Since governments are monopolies that grant and protect property rights, such rights are expected to be undersupplied and overpriced in that taxes levied to protect them are likely to be too high, while the sets of property rights protected are generically too small (Sened, 1997). Also, governments are motivated by distributive and redistributive rather than efficiency incentives (Knight, 1992). Add to that the rather well known range of x-inefficiencies that most governments suffer from and you get notoriously inefficient mechanisms of protection of property rights. And yet, governments' grant and protection of property rights are almost always

[1] The argument that the property rights are the nexus of what North (1981, 1990) calls the 'structure' of the economy and that they depend, above all, on government grants and enforcement of such rights is articulated in Sened (1997).

a necessary and a sufficient condition for markets and so many other societal structures to emerge and prosper (North, 1990; Sened, 1997).

Our logic of the essence of the middle class follows North's (1990) argument of how economic firms affect the evolution of economic institutions. Like any player in the Northean analytical framework, representatives of the middle classes should petition precisely for those institutions that protect the property rights they depend on, just like firms in the Northean framework affect changes in the institutional structures they operate under, by using their resources to petition and lobby for changes that increase their marginal returns. The middle class has less financial capabilities than the organizations referred to by North, but master political mussels to introduce and preserve institutions that protect the property rights they depend on.

Revenue-maximizing governments (Levi, 1988) should invest in protecting the property rights of the middle class, as this class is the most likely to yield the highest return to their investment in the protection of property right. One could argue that is what OECD governments did to overcome the devastation that WWII brought about. Economist are closely monitoring the well being of the middle class in developing countries in an effort to predict the economic prospect of these emerging economies (Kharas, 2010). In developed countries, many governments responded in the same rhetoric after the 2007-8 economic downfall, but failed to follow FDR and Beveridge who responded to the 1930s' crisis with a comprehensive grant of a significant number of generic property rights in cheap housing, free education, access to health care, job security, secured pensions and other benefits that protected and enhanced the strength of the middle class from the late 1940s until the end of the 1980s (Timmins, 2001).

By the late 1980s the remarkable structure of property rights that so many OECD central governments established to protect and promote the middle class, came to be inefficient and expensive. At that point, special interests found a 'Northean' (1990) way to alter the structure of the property rights that regulate the economy to its current, laissez fair, neo liberal structure. A significant reduction of government spending with less property rights to enforce, and unregulated global markets, led many economies of the world to flourish in the two or three decades that followed. The structure of the global economy was changed forever from a welfre state structure to a laissez fair structure dominated by multinational large corporation that received significant protection to conduct their businesses as best they saw fit at the expense of the welfare state structure that previously dominated and relied so heavily on the protection of the privileges of the working middle class rather than their employers.

The sharp economic decline of the first decade of the third millennium made everyone appreciate the unstable 'boom and bust' dynamics of this new structure, with its intrinsic drive to increased inequality (Piketty (2013) that comes mainly at the expense of the middle class, but it was probably too late to do anything about it.

If governments enforce property rights structures to maximize their own utility in tax returns and political support (Levi, 1988, Sened, 1997), they should enforce rights to protect the economic strength of the middle class as consistent with the common belief that a strong middle class is critical for the long term economic prosperity of any government whose welfare rests on tax revenues. Thus, contrary to Piketty's dark predictions, we should expect a cyclical return of legislations that would protect property rights that sustain and strengthen the middle class. Just as the neoliberal ideology came to critique the welfare driven models of FDR and Beveridge, now the neoliberal model is seen as inadequate and failing. While economies are able to bounce back from recession points and fluctuate, the trajectory of the middle class cannot follow the

same pattern and results in decline or the new "lower-middle" class status. This paper offers an insight into the logic of this decline and measurement and other tools to study it.

1.2 Diminishing Returns in the Grant and Protection of Property Rights

If granting and enforcing property rights to protect the middle class is a good investment opportunity, governments are expected to make those investments. But what makes the middle class so worthy of these investments in grants and protection of property rights that cater only or mostly to the special needs of the middle class? We articulate a theory of 'diminishing returns on the grant and protection of property rights' to complement the argument advanced in the previous section. Our argument is rather simple: government returns to investment in the protection of property rights for the rich and the poor are low, compared to the higher returns for government investment in the protection of property rights and well being of the middle class.

Zucman (2014) traces one significant way in which the rich can keep their riches without relying on complicated structures of property rights: *simply by hiding it*. More generally, the rich tend to fend for themselves and protect themselves using the very wealth they have, to protect this wealth. So they often depend less and may even have an incentive to evade the offers of the state to protect them. The very rich have quickly diminishing returns in the protection of the property rights of the public at large. Such protections are costly for the economy and serve little if anything from the perspective of the wealthiest segments in society. At a certain level, any fortune should reach diminishing returns to investment, which may be one reason why the wealthiest tent hide or donate such huge proportion of their wealth (Zuckman, 2014) instead of investing it back in market transactions. Excessive wealth in the hands of few is likely to result in two types of inefficiencies. First, the logic of diminishing returns must apply to the accumulation of wealth as it applies everywhere else. Second, the management of large financial assets suffers, generically, from the same x-inefficiencies, commonly associated with the conduct of central governments. The management failures, found in mega corporations in the U.S. economy was nicely summarized in the third conclusion of the Financial Crisis Inquiry Report (2011: XVIII):

> *We conclude [that] dramatic failures of corporate governance and risk management at many systemically important financial institutions were a key cause of this crisis.*

At the other end of the spectrum, government have little incentives to invest in protecting complex structures of property and human rights to the poor. Transfers to the poor are likely to be ineffective. This constituency is least likely to benefit from basic protections of property rights, with little if anything to protect, with poor education, poor health and little property. Crime infected neighborhoods, poor health and education and lack of other protections against destitution are detrimental to productivity and long-term investment. They also explain the limited prospects of philanthropic or otherwise motivated redistribution towards the poor (Gibson et al., 2005). Thus, governments have little to gain from the investment in the protection of the property rights of the poor. They may find it much cheaper to use simple transfers to keep this segment of the population happy without incurring the high costs of protecting their rights.

Members of the middle class have strong incentives to protect what they accumulated, but are usually unable to do so on their own and must rely on central governments. Their life style can only be sustained if significant efforts are invested in protecting assets and services, like health, education and personal security that help them sustain their position in society. The middle class reinvests a fair amount of its income in its own economic development and in the development of the society as a whole. Since members of the middle class depend on their savings and

investments for the education of their children, retirement and health related expenses, and other resources each family disposes, members of this class must manage their finances carefully and invest wisely and efficiently. Banerjee and Duflo (2008: 22) document the tendency of members of the middle class to invest in education and health. More generally, the assets accumulated by members of the middle class are easier to protect against predatory practices as they tend to be closely managed and protected by the individuals who invested in them rather than by others.

Conventional wisdom highlights the importance of the middle class to the economy, but there is little theoretical basis behind this wisdom. Our theory states that the investment in the protection of property rights for the middle class yields higher returns in the productivity of its members and in the returns to financially secure, long-term investments that this set of individuals tend to engage in. Returns to the investment on protecting property rights to the very rich quickly diminish. While the returns for protecting property rights for the poor may be significant, the high costs associated with such efforts for the rather little returns expected in the short run, sway governments away from such investments. Helping the poor is normatively appealing but, at least for the short-term, returns to these investments are likely to be small if any.

For decades, the study of the effects of inequality yielded inconclusive results (Banerjee & Duflo, 2005). The reason may be that while reducing inequality by promoting a strong middle class may increase productivity, reducing inequality by redistributing wealth to the poor may have a negative effect on the economy. For one, if income is redistributed through transfers from individuals capable of saving to individuals with little propensity to save, the aggregate level of savings would tend to be lower, decreasing investment and economic growth (Kaldor, 1956). Second, governments tend to promote redistributive policies that favor the poor to alleviate political pressures, using progressive taxes. Imposed at the margin, such taxes affect the incentives for investment of the middle class and the rich, resulting in a negative effect on the rate of growth (Alesina & Rodrik, 1994). It should therefore come as no surprise that empirical studies, aimed at testing the effects of income inequalities on growth yield inconclusive results Israel Turkey and the U.S. are very strong economies with very high Gini coefficients. Germany, Sweden and Norway are also very strong economies with relatively low Gini coefficients.

Thus, from a theoretical point of view, the size and strength of the middle class may be a better explanation for social prosperity and political sustainability than measures of inequality. Lama and Sened (2015) engaged in a preliminary test of this hypothesis and came up with very promising results. Using a similar strategy to assess the strength of the middle class, to the strategy we further develop and present in the next section, they conducted a simple Pearson correlation test on the strength of the middle class and the GDP Growth (Table 1a below) and GDP per capita (Table 1b below, both borrowed from Lama and Sened, 2015).

Table 1a. Correlation between Middle Class and GDP Growth

		Middle class	GDP Growth
Middle class	Pearson Correlation	1	.781**
	Sig. (2-tailed)		.003
	N	13	12

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1b. Correlation between Middle Class and GDP Per Capita.

		Middle class	GDP Per Capita
Middle class	Pearson Correlation	1	.740**
	Sig. (2-tailed)		.004

N	13	13

**. Correlation is significant at the 0.01 level (2-tailed).

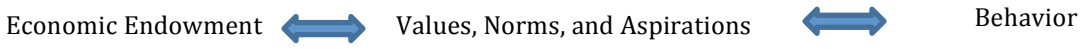
This finding, limited in scope and generalizability as it may be, provides suggestive evidence to our argument that returns to investments in property rights for the rich and the poor may have lower expected returns than returns to the grant and enforcement of *property rights structures* that protect mostly the middle class. Thus, instead of focusing on popular demands to reduce inequality by redistributive policies, the middle class and tax revenues maximizing governments may benefit significantly more from erecting and protecting structures that protect the middle class. This may explain the broad wave of implementing the structure of the middle class that so many governments engaged in, presumably independently, after WWII.

1.3 The Values and Consumption Patterns of the Middle Class

We still need to explain why the middle class may have a propensity to behave in ways that make the investment in protecting the property rights of the middle class yield such high returns. The theoretical foundations of the study of the middle class are underdeveloped. Banerjee and Duflo (2008) summarize the three common answers to this question, in the literature:

> In one, new entrepreneurs, armed with a capacity and a tolerance for delayed gratification emerge from the middle class and create employment and productivity growth for the rest of society …In a second, perhaps more conventional view, the middle class is primarily a source of vital inputs for the entrepreneurial class: it is their "middle class values", their emphasis on the accumulation of human capital and savings, that makes them central to the process of capitalist accumulation [of wealth]... The third view, a staple of the business press, emphasizes the middle-class consumer, …who is willing to pay a little extra for quality. It is the demand for quality consumer goods that feeds investment in production and marketing, which, in turn, raises income levels for everyone.

In this paragraph Banerjee and Duflo outline the main ingredients of what we refer to as a 'Values and Consumption' [VC] theory of the middle class. These arguments assume intrinsic characteristics of the middle class that explain the contribution of the class to the economic growth of societies that breed it. Banerjee and Duflo find little significant empirical support for this assumption but find a tendency of the middle class to have less children and invest more in education, health care and other individual foundations that translate into higher paying jobs and longer life expectancy amongst others (2008: 22). This leads us to suggest what we believe to be a more appealing foundation for a VC theory of the middle class. It stipulates that the three generic classes in society have different endowment they enter the market with. These endowments induce different generic values that lead to different behavioral patterns that explain, amongst others, the remarkable productivity of the middle class. A graphic representation of this theory may look like this:[2]



Going back to neo classical primitives, we argue that the poor enter the game with no *endowment*. Hence, they must sell their labor to survive. They cannot borrow money, and cannot accumulate capital or any other assets for that matter. Over time, their values skew towards the

[2] To the best of our knowledge, this graphic presentation and the articulation of the particular argument that follows is due to Ron Watson, a former student of Dr. Itai Sened who worked with him for a while on this line of research.

present with little emphasis on savings, investment, education and good health. They aspire to satisfy their pressing needs and look for policies that transfer resources for that purpose.

The middle class enters the game with modest assets but their main endowment is their own human capital. Like the poor, they sell their labor, but they can borrow money to manage peaks/troughs, and can accumulate further assets if and only if they manage their lives, assets and human capital carefully and cleverly. This is why they develop a set of values that puts high premiums on hard work, low risk investment and use their assets towards accumulating education and good health as observed by Banerjee and Duflo (2008: 22). They aspire for a "middle class bundle" of consumption consisting of educations, healthcare and savings. Thus, their preferences favor public schools and healthcare and a safe pension plans. These values combat the historic five giants, as they cannot afford the luxury to taking their standard of living for granted.

The rich come to the game with a large endowment in capital and other, mostly easy to liquidate, assets. They can borrow at rates near the risk free rate so as to live off passing or more stable market investment opportunities which explains the Piketty - Zucman argument as to why the rich get richer and hide so much of their wealth. The value system they develop over time corresponds to the realities of their lives and is set to conserve and protect their entrenched privilege. Their derived public policy preferences are to secure their wealth as best they can and reduce taxes by opposing public goods and maximize very privatized gains.

1.4 Theoretically driven empirical derivatives

In many ways, the theory outlined above is over determined. It is not entirely clear to us at this point if and in what way we can adjudicate the relative merits of each component of the theory, relative to the others. Nor do we pretend to have exhausted all possible theoretical explanations of what distinguishes the middle class from the other two generic groups in societies and what explains its unique contribution to political stability and to long-term economic prosperity. As in any over identified model, the components may multicolinearly correlate. This may pose significant problems in the statistical analysis we turn to next, but the derivatives of our theory are clear to see. We now turn to test two hypotheses that follow from our theoretical analysis:

Hypothesis 1: *The features that distinguish the middle class from the rich above must be found in terms of assets and consumption patterns while the features that distinguish the middle class from the poor must be found in terms of investment in long-term health and education.*

Hypothesis 2: *Income should correlate with class lines but can be shown to be a by product rather than the driving force behind the cut point separators between the different classes.*

Our theoretical conclusions, if corroborated by the data, suggest different causes and different remedies for the decline of the middle class. Our analysis suggests that the accumulation of wealth at the top and the decline of the middle class are only partially explained by the Piketty – Zucman arguments. Our theory provides an important complement to theirs. Their observation that cheap credit and tax shelters give significant advantages to the rich explains the ever growing capacity of the very rich to accumulate wealth. But the decline of the middle class, by our argument, emanates mostly from the erosion of property rights institutions that protect the values, life style and wealth accumulation capability of the middle class.

The derivative policy recommendations of these complementary arguments are quite different. Piketty and Zucman arguments imply a call for better taxation and redistributive measures coupled with a rigorous chase after tax evasion. Our argument suggests policies geared toward

access to cheap and high quality health care, education and job security. They promote capture and redistribution, while we promote protection of the middle class bundle of property rights to protect the middle class intrinsic values and life style rather than chase after lost fortunes.

2. Method

Traditionally, the middle class has been thought of in relative terms and conceptualized as the middle portion of the wealth distribution. In this paper, we conceptualize the middle class as a group of people defined by a bundle of property rights and privileges that protect their access to education, health care and economic assets. Such conceptualization presents numerous measurement challenges. A major challenge is how to develop a standardized measure of the middle class that is valid across space and over time and independent or at the very least, less dependent on arbitrary cut points of income distributions.

2.1 Previous attempts at defining the middle class for empirical studies

The typical approach to the problem, in the economic literature, was nicely summarized by Atkinson and Brandolini (2011):

> "…economists… think of classes… as income groupings. …the middle class has been identified by setting limits either in the people space, F(y), or in the income space, y. While in the former the size of the middle class is fixed and attention is focused on the evolution of the income share, in the latter population size is the main concern."

In the 'people's space' approach, Levy (1987b) defines the middle class as the middle three quintiles of the family income distribution. Hisnanick (2010) looks at five income deciles ranging from the 25th to the 35th to the 65th to the 75th. The 'income space' variant takes the median income and then multiplies it by two factors to generate an upper and lower cut point in the income space and then either calculates the percentage of households that fit in that segment, or calculates the income share of households within that segment. Thurow (1984) and Pressman (1988) define a middle-class household as one with an income between 75% and 125% of the median household income. Bluestone and Harrison (1988) define the middle based on a low-wage cutoff at 50 percent of the median and a high-wage cutoff at 200 percent of the median. Davis and Huston (1992) define the middle class as those families with incomes between 50 and 150 percent of the current-year median income.

Another economic approach is based on consumption regularities. Wheary (2005) lists home ownership, college education, assets, and health insurance as key determinants of membership in the middle class. The Office of the Vice President (2010) states that "Middle-class families are defined by their aspirations more than their income," and make speculations as to who could reasonably aspire to home ownership, college education for the children, health and retirement security. Many, however, have cast doubts on the reasonableness of these aspirations. Kuttner (1983) wrote that "Homeownership, for years the badge of membership in the middle class, has become a nearly impossible feat for those who do not have a house already." While this approach has been articulated for decades, to date there are very few attempts at rigorous empirical research on the subject, which is part of what we contribute with our current effort.

Finally, some economists differentiate the middle class based on income cut points derived from the poverty level. Harrison et al (1986) use multiples of the official government poverty line as a proxy for minimal income needs and defines the middle class as those with annual income between two and seven times the poverty line. Eisenhauer (2008) regards the

government's official poverty line as the demarcation between the poor and the middle class. He separates the middle class from the wealthy by computing the wealth an individual would have to accumulate to be able quit work and rely on the interest and income s/he extracts from those assets above the poverty line in perpetuity. Banerjee and Duflo (2008) look at household surveys from 13 developing countries and define the lower and upper middle class, respectively, as those households whose daily per capita expenditures valued at purchasing power parity are between $2 and $4, and those households between $6 and $10.

Sociological definitions of the middle class focus on social characteristics such as occupations, political or moral values, and aspirations. Three sociological approaches to defining the middle class are worth distinguishing. The first, found most notably in Weber (1947), conceptualizes the middle class as those who are neither rich nor poor. Members of the middle class do not struggle to meet their basic needs, nor do they own the means of production. They possess job security and opportunities to become rich. The second approach (Goldthorpe et al. 1976) defines the middle class as those who save and invest and have an orientation toward the future. The poor lack the resources to invest in education or in a business and the rich already have the resources to meet many of their material desires. The middle class is uniquely positioned in that its members can fulfill their material desires, but can only do so patiently, by saving and investing. Finally, the third approach separates the poor, the middle class, and the rich by referencing occupational groups (Mills 1956, Giddens 1973, Gerteis 1998). Members of the middle class are not manual laborers like the poor, nor are they business owners like the rich. They belong to occupational groups of professional workers of different kinds.

Our challenge

There are three problems with the commonly used definitions used in the literature that we surveyed thus far. They tend to hide important variations across time and place; they are a-theoretical and they are deterministic. Definitions that rely on middle quintiles say very little about the size of the middle class over time. Definitions of the middle class should also permit variation over geography and be sensitive to local differences with important implications for measurement. For instance, defining the middle class as those between 75 and 125 percent of median national income per capita does not take into account local costs of living that probably affect who should be counted in this group. A resident of a peripheral small town with an income at 70 percent of the median national income may belong in the middle class, while the same prototype person, at 80 percent of the national median income, would probably be considered poor if she resides in an expensive metropolitan. Finally, a definition of the middle class should not be deterministic so at to allow inferences from data. A good definition must be based on theory and estimate for each individual a probability of membership in a social class rather than a deterministic 'yes or no'. A person is a member in a social club or not, but class membership is more nuanced and should be defined in probabilistic rather than deterministic terms

Three components must reside in any useful definition of the middle class. First, it must select a set of lifestyle characteristics – such as income, social status, employment, education, or property ownership. Second, a definition must provide cut points on the lower and upper tails of the distribution. The third component must identify a theoretical explanation why those included in the middle class are to be expected to behave differently than those who are not included.

2.2 Using Latent Class Analysis [LCA] as a Measurement Strategy

Our model has the distinctive advantage that it allows multiple factors to co-define the middle class and test the importance and the precise effect of these multilateral aspects of what it means to be in the middle class. We think of social class as an underlying (latent) construct that is not observed directly. The observed indicators such as *wealth, health, education*, and *property rights in real estate assets* are assumed to be the reflection of an unobserved class status.

We use an Israeli data set to illustrate the usefulness of our approach and figure out how the Israeli society is stratified in groups that are clearly defined by a multitude of variables such as income, education academic degree, employment status, housing (home owner and value), private health insurance, general expenditure, private expenditure on education, and pension.

In this paper we use the "Household Expenditure Survey of 2012" data set with 8696 observations. We thank the central bureau of statistic in Israel for providing us with access to this excellent research asset and helping us to navigate through its system. We use Latent Class Analysis with both categorical and continuous outcomes to identify the groups

2.3 A Review of Important Statistical Concepts for LCA

A **latent class model** relates a set of observed multivariate variables to a set of latent variables. It is a type of latent variable model. It is called a latent class model because the latent variable is discrete. A class is characterized by a pattern of conditional probabilities that indicate the chance that variables take on certain values. LCA with continuous outcomes has been traditionally referred to as a 'finite mixture modeling', particularly in applied statistics. Similarly, it has been known as latent profile analysis (LPA) in the social sciences.

We take C to be the random variable that is defined as class membership, with range 1, 2, …, k. Y is an observed response variable and *y* is the observed response on *Y*. We get the following equation (*j* next ranges from 1 through *k*):

$$\mathrm{P(Y{=}y)} = \sum_j \boldsymbol{P(C=j)P(Y=y|C=j)}$$

P(Y=y | C=j) = the probability of a response y by a subject who belongs to Class j (j = 1, ..., k). We are usually interested in a set of interrelated observed variables, Y_1,Y_2 , …, Y_l in studies of diverse populations. We get the equation ($\underline{Y}$=$\underline{y}$ is the vector notation):

$$\mathrm{P}(\underline{Y}{=}\underline{y}) = \sum_j \boldsymbol{P(C=j)}.\mathrm{P}(\underline{Y}{=}\underline{y}|\mathrm{C{=}j})$$
$$= \sum_j \boldsymbol{P(C=j)}\,.\,\boldsymbol{P(Y_1{=}y_1}|\mathrm{C{=}j}).\mathrm{P}(\boldsymbol{Y_2{=}y_2}|\mathrm{C{=}j})\ldots\mathrm{P}(\boldsymbol{Y_1=y_1}|\mathrm{C{=}j})$$

Based on the **local independence assumption*:*** Within each class, the random variables, Y_1,Y_2 , …, Y_l are independent of one another.

In LCA, we explain individual differences in response patterns in (i) the individual differences in class membership, and (ii) the cross-class differences in conditional (i.e., class-specific) item response probabilities – the probabilities for individual *possible responses on the items.*

LCA is fundamentally based on the concept of *likelihood* and related notions that are especially relevant in the context of applying LCA in empirical social research. The parameters of the model are estimated by using the method of maximum likelihood (ML), a popular approach to parameter estimation, in particular in LCA utilizations in empirical research. Part of the reason is that, *with large samples*, the resulting ML estimates possess optimal and desirable statistical properties – *un biasedness, consistency, normality, and efficiency* (Rakov, 2008).

ML estimates satisfy the invariance property – the ML estimate of a parameter that is a function of an ML estimate(s), is that same function of the individual parameter ML estimate(s). The maximum likelihood (ML) value is obtained via the expectation-maximization (EM) algorithm.

The first step in the mixture model estimation consists of choosing a suitable model with an appropriate number of classes (sub-populations). Choosing the model with an appropriate number of classes is crucial. The commonly used methods are the likelihood ratio test statistic, the Akaike and Consistent Akaike information criterion, the Bayesian information criterion and others (Fraley and Raftery, 1998; Biernanki et al., 2000; Andrews and Currim, 2003; Pittau and Zelli, 2006).

In the current research the models are compared using the Bayesian information criterion (BIC) developed by Schwartz (1978). The BIC enables the comparison of more than two models at the same time if the models that are not nested. The applicable BIC is:

$$BIC = -2\, l^* + \sqrt{n}\, q$$

Where q is the number of independent parameters to be estimated in the model, l^* denotes the maximized log-likelihood under a considered model (e.g. with $k > 0$ latent classes) and n is the sample size. Among a set of competing models, fitted to the same data set and resulting from the same observed outcome variables, *the preferred model is the one associated with the smallest BIC* (Hancock & Samuelson, 2008). We regard differences of less than 2 as weak evidence, differences between 2 and 6 as positive evidence, differences between 6 and 10 as strong evidence, and differences greater than 10 as very strong evidence (Jeffreys, 1961, Kass and Raftery 1995).

Having carried out LCA and decided for a certain number of classes, we will proceed with 'assigning' studied subjects to these classes, answering the question of who belongs where.(which of the classes). This question can be answered by using in an instrumental way the concept of *conditional probability.* This is the probability of an event on the assumption that another event (with positive probability) has actually occurred.

3. Empirical results: A Statistical Analysis of the Case of Israel

3.1 List of Variables Included

1. **Income** - Most of the research on the subject defines the middle class in terms of cut points on income distributions. Income is a good proxy for standard of living. However, this variable may misguide and mislead for several reasons. First, unreported income is a significant source of income in most economies.[3] Second there *Inter Generational transfers* are usually not taken into account in household income surveys. Many households manage to keep a high standard of living with very modest incomes. They manage to buy a house with the help of the parents, siblings, inheritance, etc. Thus, income can and should indeed be included in the analysis but must be complemented by other variables we include in the analysis and list below.

2. **Housing** - If one owns a home and if the value of the home is above 1.5 million shekels. 1.5 (approximately) NIS reflects the average price of a new apartment in Israel[4].

3. **Academic degree** – if the head of a household has an academic degree. (Categorical Variable)

[3] Estimates of the black economy in Israel are high, relative to other OECD countries, at about 20% of GDP (Gruber, 2014).
[4] According to the ministry of construction and housing , The data were taken from the ministry site at april 2015.

4. **Private health insurance** –if the household expend on private health services. Consumption of health insurance is a good measure for the social and economic status of the household. It should also give us important insight of the consumption habits of the middle class and whether we find similar findings to Benerji and Duflu (2008) and others. (Categorical variable)

5. **Education expenditure -** how much does the household spend on education. This variable gives us insight on consumption habits of and would help corroborate, or put in question, findings by Benerji and Duflu (2008) and others. (Categorical and continuous variable).

6. **Employment status -** if the head of the household is working or not may distinguish between lower and middle classes. (Categorical variable).

7. **Pension expenditure -** Household investment in retirement funds – may be understood as another consumption variable but is also a very important proxy to measure the propensity of the house hold for long term savings – a critical element in the equation in its own right. (Continuous).

8. **General household expenditure** – Standardized per person in the household.

9. **Religion** distinguishes Jewish from non-Jewish head of household . Israel is polarized religiously. These divisions affect the propensity of a household to belong to one class or another.

3.2 Results

According to the data and the BIC criterion the four classes solution seems most suitable. the p – value on the Lo-mendell-rubin test showed significant support for the 4 class solution.

The groups can be interpreted as "lower" (poor), "middle class"(or lower-middle) "upper-middle class" and "upper" (rich) in the case of four classes and as "lower", "middle class" and "upper" in the case of three classes. With three components the "lower" group is the dominant one.

In a multivariate analysis, a single variable does not give us a clear picture. Tables 2 and 3 provide a more comprehensive analysis. The lower class numbers 48% of the sample, 43% of the sample populate the middle class (or lower middle), 4% populate the upper middle class and the rich (upper class) number 3.4% of the sample. This picture is consistent with state of the art estimates in other research, which gives it further construct validity.

Table 2: class proportions to the four classes' solution and results in probability scale

	lower	Middle class	Upper-middle	Upper
size	**49%**	**43%**	**4%**	**3.4%**
Home owner	58%	80%	71%	85%
Home value (above 1.5 m)	4.8%	35%	45%	62%
employment	52%	73%	87%	65%
Academic degree	15%	40%	71%	67%
Private health	8%	46%	66%	63%

Source: Data from household expenditure survey 2012, Central bureau of statistic in Israel

Table 2 and 3 speak directly to our argument. They show that the income variable distinguishes rather poorly between the middle and the upper class. It does a better job at distinguishing the lower from the middle class, but it is certainly not a single variable story. Not surprisingly, general expenditure gives us similar results as it is highly correlated with the income variable, but has a significant independent effect. Figures 1 and 2 provide a graphic summary of the income variable to illustrate its shortcomings in separating the upper and upper middle classes from the middle class.

Figure 1: Income Distributions by Class and Overall.

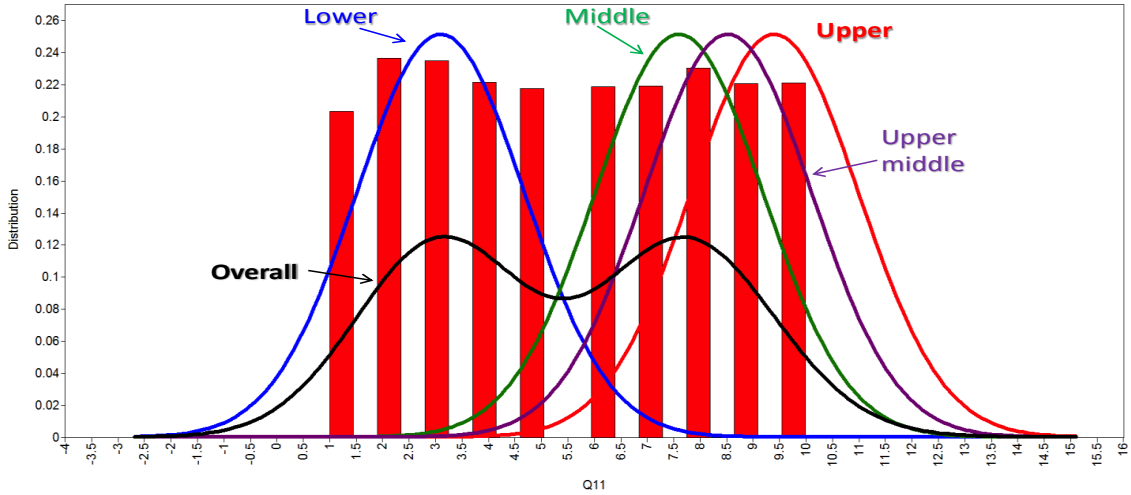
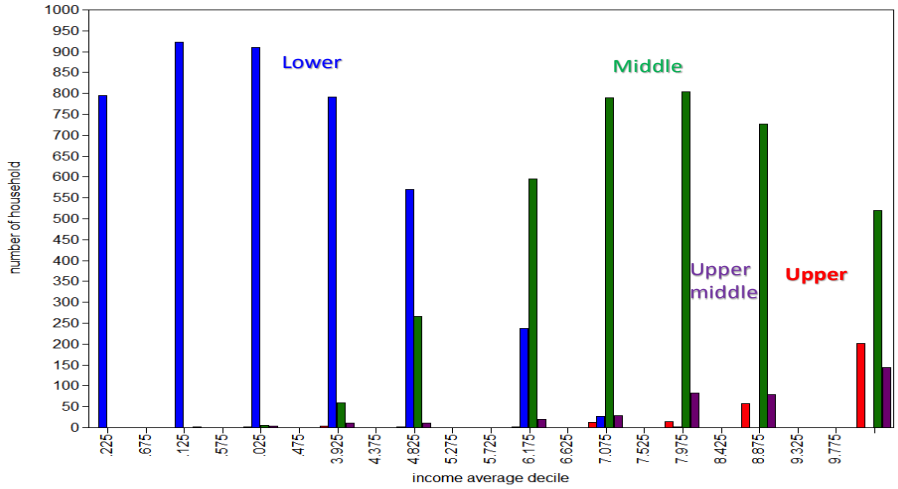


Figure 2: Income Distributions by Class and Overlap.



Figures 1 & 2 illustrate the weakness of the income variable in distinguishing the very rich from the middle class and to distinguish sharply between the middle class and the lower class. It suggest that in order to have clarity in studying the middle class, the income variable does not provide the clarity we may wish to have and that health, education and home values provide us with important and absolutely necessary complements in this respect.

Consistent with our expectations, education and pensions fare remarkably well in separating all three class (lower, middle and upper middle) by two much sharper cuts. In the Israeli case, the expenditure on education seems to materialize in that the academic degree variable also separates the poor from the middle class and again the upper classes from the middle class quite sharply. It is hard to assign causality here, as it may very well be that wealth breads education rather than the other way around but the sharp cut lines are clear to see in the analysis.

The upper class group differs mainly on general expenditure, but employment rate are lower than the middle and upper middle class groups, also spending on pensions is relatively lower than the middle and upper middle class groups. These finding, together with the number of persons in the household can attest to households concentrated in older age groups.

Contrary to common wisdom, at least in Israel, we find that home ownership distinguishes well between the poor and the middle class but not between the middle class and the upper classes.

As expected, the analysis shows that the Arab minority is a particularly poor group, almost 30% percent from the lower class are Arabs household, while their weights in the other three class groupings, middle, upper middle and upper classes does not exceed 4%.

Table 3 Model Results Continuous variables (means in thousands of shekels, and per capita in household, except for income deciles)

	Lower class	Middle class	Upper middle	Upper class
General Expenditure	3.56	6.79	8.36	17.25
Education exp	0.17	0.31	0.54	0.56
pension	0.06	0.14	1.14	0.112
Income deciles	3.1	7.6	8.53	9.4

Source: Data from household expenditure survey 2012, Central bureau of statistic in Israel
Note: all values are significant in 0.05.

To sum up, to move up from the class of the poor, one seems to need to have employment, education, health care savings and real estate. But what makes one move to the higher, upper middle group is spending yet more money on private education, have significantly more private health care services and having hefty pension funds. This seems to suggest that the very rich are not that different from the upper middle class. They simply do a whole lot more of the same. Remains to be seen if our story of diminishing returns in the domains they invest are as we expect them to be which would be a subject to further research. As for the poor, the story here seems a whole lot more nuanced than commonly thought. The poor class suffer from lower education expenditure, lower pension savings, and lower income but on all of those dimensions their numbers are about half of the middle class. A much bigger gap opens in home values – 15% of the middle class; private health care – 17% of the middle class and degree attainment

which stands at 37% of the middle class. This picture suggests straightforward, non market, policy solutions in the general support for health care education and neighborhood improvement. 'Affordable housing' may not provide as much help as is often prescribed if it maintains the low values of where the poor end up living.

4. Comparison to Other Studies

Comparison between the finding of various studies of Israel's middle class raise an interesting point: A study conducted by the Israeli Knesset in accordance with the economic definition of Thurow found that the size of the middle class is about 39% (total). The middle class was defined as households whose income is in the range between 75 and 200 percent of the median income. The poor were defined as households with income below half of median income. It is unclear what happens with households within range between half median income to 75 percent. Nisanov (2014) applied a similar method to ours, but used only the income variable to distinguish among classes. As we explained at the previous section, income variable is a good proxy but insufficient to distinguish between social classes. According to that study, the size of the middle class is about 70 percent of total households. Comparing these studies puts a big question mark around the use of different indicators for measuring inequality, poverty and class. It suggests a nuanced picture that is easily biased by the measurement tools and indicators used in the analysis.

Table 4: comparison with other studies

class	Income mixture Model (Nisanov***)	subjective Definition (knesset*)	Median income	multivariate **analysis
Lower	26.6%	26.2%	34%	49%
Middle	40.5%	40.6%	21.6%	43%
Upper middle	29.3%	25.2%	17.6%	4%
Upper	3.6%	5.2%	26.8%	3.4%

Source: *kenesset research center
** current study / Latent Class Analysis
**Nisanov z , "middle class in Israel", Taub Center

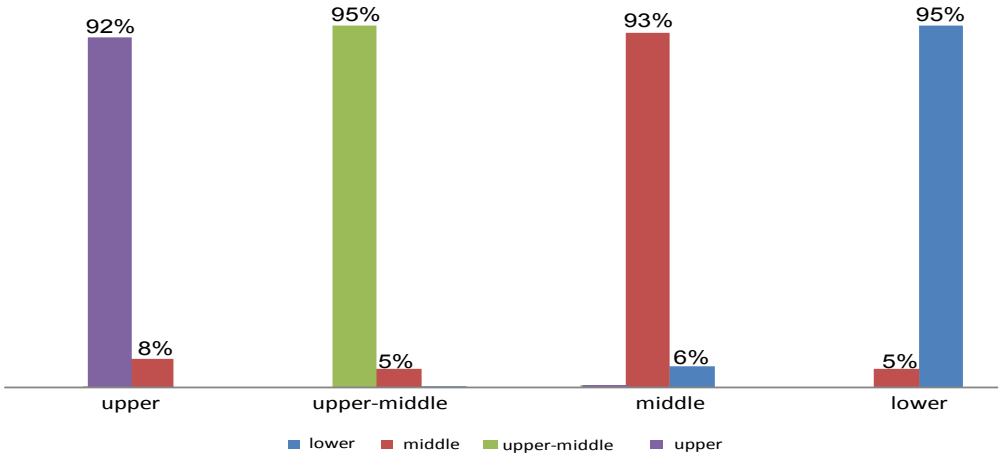
The third study shown in Table 4 presents a qualitative study conducted by the Research Department of the Israeli parliament: in this study households were asked what they thought their financial situation that is what economic class they belong. 68% percent from the household thought they belong to the middle class. These findings are quite similar to Nisanov's findings, which is not surprising as households were asked about their socio-economic status and tended to refer mainly to their income. The clearest feature that distinguishes our findings from the three other studies is that

we found the size of the lower class to be 49 % which is much wider compared to the other studies. One possible explanation for this finding is that the study takes into account the issue of capital, employment and educational profile of the head of household. Clearly, households at the lower status may have reasonable income but serious vulnerabilities in their access to capital and education.

5. Mobility and Vulnerability

One main concern of any study of the middle class is the issue of the vulnerability of the this class and the likelihood of upward mobility of the poor into the middle class. Figure 3 is a remarkable testimony to this aspect of the study that other methods simply do not provide us with. It shows the Average Latent Class Probabilities for Most Likely Latent Class Membership by latent class. In other words, it summarizes the computation the model estimates of what the average probability for upper, upper middle, middle, or lower class households to be in another class than the one the model assigns them to. We can see that middle class household has 6 % probability (average) to be in the lower class and 0.6% percent to be in the upper class and upper middle. The highest class has a probability of almost 8% to be in the middle class and zero probability of belonging to the poor. Finally the poor have only 5% probability of belonging to the middle class and zero probability of belonging to the highest class and the upper middle class. We believe that these calculated probabilities of misclassifications by the model are good proxies for the actual chances of any individual to move up or down in the class structure we study. These probabilities of misclassification of class must be highly correlated with the actual probability of individual to move across class lines up or down. If this interpretation is correct, it suggest that at least in Israel, while downward mobility is quite likely, upward mobility is almost null. These does go a long way towards illustrating the erosion of the middle class, regardless of what the theoretical explanation of this erosion might be..

Figure 3: Average Latent Class Probabilities for Most Likely Latent Class Membership by latent class



Source: Data from household expenditure survey 2012, Central bureau of statistic in Israel

Discussion

Following the financial crisis of 2007-8, the strength or weaknesses of the middle class has come to occupy a central role in the discussion of economic recovery. Despite the vested interest in the middle class, rigorous scholarship of the subject has been sparse. This neglect may be correlated with the common method used by most economists to measure the strength of the middle class, almost invariably, by different cut-points of income distributions.

Our paper provides an outline of a theoretical framework to guide more rigorous research in this field and another important contribution, offering a new way to measure social mobility. Our contribution should help shed new light on the role of public policies and institutions that may maintain, strengthen or diminish the stability and strength of the middle class.

The research suggests two original theories that may help us understand the strength or weakness of the middle class based on a property rights / value-consumption theory. The theory also guides us towards better statistical tools to study the phenomenon. The middle class was defined as a class of people, who are not only in the middle distribution of income or wealth, but benefit from a bundle of property rights that protect their access to education, health care and economic assets. A major progress was to develop a standardized measure of the middle class that is valid across time and place. Our model has the distinctive advantage that it allows multiple factors to co-define the middle class and test the importance and the precise effect of each aspect of what it means to be in the middle class. A social class is an underlying (latent) construct that is not observed directly. Our theory guides us in choosing observed indicators such as *wealth, health, education*, and *property rights* as the correct empirical reflections of the unobserved class status.

Our preliminary results in our analysis of the case of Israel, indicate that in order to move up from the poor class, households must find employment, education, health care, savings and real estate. What makes one move to the higher, upper middle group is spending more money on private education, have significantly more private health care services and having larger pension. The poor class suffers from lower education expenditures, lower pension savings, and lower income but on all of those dimensions their numbers are about half of the upper middle class. A much bigger gap opens in home values – 15% of the middle class; private health care – 17% of the middle class and degree attainment which stands at 37% of the middle class. Middle class households are very vulnerable to downward mobility while their propensity to upward mobility is close to zero. The poor have only 5% probability of belonging to the middle class and zero probability of belonging to the highest class and the upper middle class. Our estimates suggest that the lower class in Israel is much bigger compared to other studies (Nisanov 2014,Bank of Israel 2012). We believe that this is yet another indicator of the vulnerability of many in the modern economy under the new structure of the global economy. They may make enough money to seems well off, but their propensity to invest in their status and future is quickly diminishing.

Conclusion

We hope to have illustrated the merits of solid theoretical foundations and a rigorous measurement strategy to the advancement of the study of middle class, that leads to much clearer understanding and may enable much more careful and nuanced policy recommendations.

Our preliminary results are encouraging but it will take a lot more work to establish the extent to which it is viable and useful as a research and measurement strategy and the resolution with which it may endow us when we come to devise public policy solutions.

Having said that, our research seems to have given us valuable insight into understanding the phenomenon we are researching. In particular, it seems to have established quite clearly the exact origin and effect of the damage caused to the middle class by the sharp transition from the previous, *welfare state structure of the economy*, to the current, *mega corporation structure of the global economy*: What the middle class needs to survive and what the poor need in order to be upward mobile, are not just higher incomes and cheap housing but good education, health and

higher value of capital. Employment and shelter may be necessary conditions but certainly not sufficient to maintain middle class membership. Institutionalized property rights in the access to education, health care, housing and long term saving will have to be restored and carefully protected in order to bring this engine of economic growth to run again.

References

Alesina, A. & Rodrik. D. (1994). "Distributive Politics and Economic Growth", *The Quarterly Journal of Economics*, Vol. 109, No. 2, pp. 465-90.

Andrews, R.A. and I.S. Currim (2003) "A comparison of segment retention criteria for finite mixture logit's models", Journal of Marketing Research XL, 235–243.

Aristotle (1984). *The Complete Works of Aristotle.* Edited by Jonathan Barnes. Princeton: Princeton University Press.

Banerjee, A. & Duflo, E. (2005). Growth Theory through the Lens of Development Economics,' *Handbook of Development Economics*, Vol. 1a: 473-552.

Banerjee, A. & Duflo, E.(2008). "What is Middle Class about the Middle Classes Around the World?" *Journal of Economic Perspectives* 22(2), p 5.

Biernacki, C., G. Celeux and G. Govaert (2000) "Assessing a Mixture Model for Clustering with the Integrated Completed Likelihood", IEEE Transactions on Pattern Analysis and Machine Intelligence 22, 719–725.

Birdsall, N., Graham, C. & Pettinato, S. (2000). "Stuck in the Tunnel: Have new Markets Muddled the Middle? " Center on Social and Economic Dynamics Working Paper 14, Brookings Institution, Washingotn D.C.

Blank, R.M. (2008). How to improve poverty measurement in the United States. *Journal of Policy Analysis and Management, 27*(2), 233-254.

Brady, Henry, Sidney Verba and Kay Scholzman (1995). "Beyond SES: A Resource Model of Participation," *American Political Science Review* 89: 271-294.

Calvert, R.L. (1995). "Rational Actors, Equilibrium and Social Institutions," in J. Knight and I. Sened (Eds.): *Explaining Social Institutions*. Ann Arbor: Michigan University Press.

Carino, J. (2009). "Poverty and Wellbeing ", in Sate of the World's Indigenous Peoples, UNPFII. http://www.un.org/esa/socdev/unpfii/documents/SOWIP_web.pdf.

Cashell, B. W. (2007). "Who are the 'Middle Class'" Federal Publications Congressional Research Service (CRS) Cornell University ILR School.

CIA The World Factbook. Gini coefficients are taken from the CIA the world factbook as customary.

Demsetz, Harold. 1967. "Toward a Theory of Property Rights" *The American Economic Review*, Vol. 57, No. 2: 347-359.

Demsetz, Harold. 1982. *Economic, Legal and Political Dimensions of Competition,* Melbourne: Elsevier Science

Eisenhauer, J.G. (2008). "An Economic Definition of the Middle Class." *Forum for Social Economics*, Volume 37, Number 2: 103-13.

"Final Crisis Inquiry Report 2011 of the National Commission on the Causes of the Financial and Economic Crisis in the United States" Submitted by Pursuant to Public Law 111-21 January 2011, Superintendent of Documents, U.S. Government Printing Office.

Fraley, C. and A. E. Raftery (1998) "How many clusters? Which clustering method Answers via model-based cluster analysis", The Computer Journal, 41, 578-588.

Gibson, C. C., Anderson, K., Ostrom, E. & Dujai, S. (2005). *The Samaritan's Dilemma.* Oxford: Oxford University Press.

Gruber, N. 2014. *The shadow economy in Israel.* Israel:, Taub Center for social policy studies in Israel, Policy paper series. Policy paper no 2014.11.

Hancock, G. R. and Samuelson, K. M. 2008. *Advances in Latent Variable Mixture Models*. Charlotte NC: Information Age Publishing.

Harvey, David. 2005. A Brief History of Neo-Liberalism. New York: Oxford University Press.

Iceland, J. 2005. Measuring Poverty: Theoretical and Empirical Considerations. *Measurement*, 3(4), 207-243.
Jeffreys, H. 1961. Theory of Probability. Clarendon, 3rd edition
Kaldor, N. 1956. Alternative Theories of Distributions." *Review of Economic Studies*, Vol. 23.
Kass R. E. and A. E. Raftery. 1995. "Bayes factors", Journal of the American Statistical Association, 90: 773–95.
Knight, F. H. 1921. *Risk, Uncertainty and Profit,* Boston, MA: Hart, Schaffner & Marx; Houghton Mifflin Co.
Knight, Jack. 1992. *Institutions and Social Conflict.* New York: Cambridge University Press.
Lama, Gyanesh and Itai Sened. 2015. "The Middle Class: A New Conceptual and Measurement Framework" *Journal of Measurement and Methods in the Social Sciences* Forthcoming.
Levi Margaret. 1988. *Of Rule and Revenue.* Berkeley: University Press of California.
Lerman Robert .1996. The impact of changing us family structure on child povery and income inequality. *The Economic Journal* Vol. 92: 886-902.
McLachlan, G. and D. Peel .2000 Finite Mixture Models, Wiley, New York.
Miller J. Gary. 1992. *Manegerial Dillema.* New York: Cambridge University Press.
Mplus Data Analysis Example: Latent Class Analysis. UCLA: Academic Technology Services, Statistical Consulting Group. From http://www.ats.ucla.edu/stat/sas/notes2/ (accessed June, 2010).
Nisanov, Zoya. 2012. "The socio-economic characteristics of the middle class," Unpublished Manuscript.
Nisanov, Zoya.2014."The Middle Class in Israel". Taub Center for Social Policy Studies in Israel. Policy Paper No. 2014.04**.**
North, Douglass. C. 1990. *Institutions, Institutional Change and Economic Performance,* New York: Cambridge University Press.
North, Douglass. C. 1981. *Structure and Change in Economic History,* New York: Norton.
North, Douglass. C. Wallis, John. J. Weingast, Barry. 2009. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*, New York: Cambridge University Press.
Piketty, Thomas. 2013. *Capital in the Twenty First Century.* Boston, Harvard University Press.
Pittau M.G. and R. Zelli .2006. "Trends in Income Distribution in Italy: a Non-Parametric and a Semi-Parametric analysis", Journal of Income Distribution 15, 90-118
Pittau M.G., R. Zelli and P.A. Johnson. 2010. "Mixture Models, Convergence Clubs, and Polarization", Review of Income and Wealth 56(1): 102-122.
Psacharopoulos, G. & Patrinos, H. A. 1994. Indigenous People and Poverty in Latin America, An Empirical Analysis. World Bank Regional and Sectoral Studies. Washington DC: The World Bank.
Rauchway, Eric. 2008. The Great Depression and the New Deal: A Very Short Introduction. New York: Oxford University Press.
Raykov, T., & Zajacova. 2012. On Latent Change Model Choice in Longitudinal Studies. Structural Equation Modeling, 19, 580-592.
Rutstein, O.S & Johnson,K. (2004). DHS Comparative Report 6: The DHS Wealth Index. Calverton, Maryland: Measure DHS+ ORC Macro.
Schumacker, R. E. & Lomax, R. G. (2004). A Beginner's Guide to Structural Equation Modeling (2nd Ed). Mahwah, NJ: Lawrence Erlbaum Associates.
Schwartz, Gary. 1978. "Estimating the dimension of a model", Annals of Statistics 6, 461-464
Sen, Amartia. 1999) Development as freedom. New York: Knopf.
Sened, Itai. 1997. *The Political Institution of Private Property,* Cambridge: Cambridge University Press.
Sened Itai, Marshall Thompson and Robert Walker. 2014. "The State, Property Rights and the Middle Class: *A Fresh Start"* ***Indiana Journal of Political Science,*** Vol. 14.
Sherraden, Michael. 1991. Assets and the poor: A new American welfare policy. Armonk, New York: M. E. Sharpe, Inc.
Smith, Adam. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations,* London: Strahan & Cadell.
Sugden, Robert. 1986. *The Economics of Rights, Co-operation and Welfare,* Oxford: Basil Blackwell.
Titterington, D., A. Smith and U. Makov. 1985. *Statistical Analysis of Finite Mixture.*
Timmins, Nicholas. 2001. *The Five Giants: A Biography of the Welfare State.* London***:*** HarperCollins Publishers
Zucman, Gabriel. 2014. "Taxing Across Borders: Tracking Personal Wealth and Corporate" *Journal of Economic Perspectives*, Forthcoming.