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“Welfare-improving policies targeting unintended fertility outcomes in the U.S. - The open case study of the Affordable Care Act’s Contraceptive Mandate”

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Abstract

The efficacy of welfare-improving policies such as the ACA's Contraception Mandate may be weakened by the effect of spurious relations between its target and means, as well as other non observable factors that stem from or consist of religious beliefs. This study comprises a broad review of the bi-univocal relation between contraception and growth, upon which further improvements in public policies' effectiveness can be achieved. Namely, relevant cost-benefit analyses at the basis of such policies have generally relied on measurable — but limited — data sets, mainly consisting of the final (contraceptives) users' demographic characteristics, like race, age, income and education levels, and — obviously — gender. This limited approach may have in fact impeded welfare-improving policies from timely reaching their full potential effectiveness. However, such choice was likely due to technical difficulties in observing and collecting relevant big data other than demographics, that may contribute to achieve a better understanding of the channels through which public policy can act upon its targets.

Further obstacles to a functional evaluation of costs and benefits of public policy's means seems to have stemmed from structural gender-based misinterpretations of the disposable data set. For instance, research and policy-makers have long constrained their focus onto social and economic costs only linked to *women's* rights violations, neglecting the weight of such inequalities' mirror image on *men's* wealth. Moreover, incomplete information about or limited understanding of medical and other technical matters (e.g. the physiological functioning of contraceptive methods, or hormone cycles) also appeared to have been detrimental to a timely, cost-effective implementation of welfare-improving policies.

This study builds upon previous research, describing possible scenarios and tools for future, more comprehensive research work. In the first section, it is presented the ongoing dispute concerning the 2010 health care reform in the US (known as ACA or Obamacare). To better understand its background and echoes at both economic and political level, dedicated sections will review the American voting system [Chapter 4] and some cornerstone regulations in the path towards the prosecution of equal opportunity goals [Chapters 2 and 3]. These sections will highlight the relation between the ACA's reform and labour market policies — and the firms' interests thereof. Chapter 2 and 3 deepen the discussion about premises and perspectives of the ACA's Contraception Mandate. Conclusive observations and suggested perspective studies are left to the final sections [Chapters 4 and 5]. Chapter 4 discusses the Contraception Mandate's relation with religiously affiliated, both voters and organisations — a survey-based pilot study is included to assesses the effect of different types of information on shifts in the voters' consensus to policies charged with high emotional content. Preliminary results suggest that in-group dynamics, rather than empirical evidence, often play a major role in shaping the voters' support or disfavour to measures of public policy. Chapter 5 presents the results of a preliminary analysis on tweets on #Obamacare, that

aims at providing an alternative insight onto reproductive dynamics and fertility planning defaults.

Introduction ~ Welfare and Obamacare

As a preliminary argument to the development of this thesis, it needs to be clarified how the Obamacare or ACA's reform can classify as a welfare improving policy. To answer this question, the first section of this chapter will introduce some representative economic theories and definitions of the welfare state (Orloff, 1993, Esping-Andersen, 1990, Korpi, 1989; Arrow, 1950, 1951, Debreu, 1959). Secondly, the main dispositions enacted by the Obamacare of 2010 will be reviewed in order to unveil the link between the healthcare reform and welfare policies (Obama, 2016; Himmelstein et al., 2009; Orloff, 1993).

i. Historicisation of the economic and demographic premises of welfare policies in the U.S.

The silhouette of the welfare state was first drawn by Adam Smith in his milestone work *The Wealth of Nations*, in which he would appoint how self-interest was to be considered a better drive than any alternative institutional leadership, for the pursuit of Public Interest. More precisely, the pursuit of self interests translates into a number of utility functions $u(x_i, B_i, E_i)$ for each member i of the collectivity, through which he tries to maximise his well-being, given a set of constraints B_i and an initial endowment E_i . Competitive markets morphs self interests into one aggregate (national) utility function, that accounts for all individuals' well-being maximisation problems. In other words, individuals' well-being or the fulfilment of their self-interests can be seen as a preliminary condition for the maximisation of the nation's wealth. In this perspective, the pursuit of individuals' self-interests through competitive markets would act as an "invisible hand" guiding collectivity's pursuit of welfare.

Although Smith would correctly notice the existence of what would later be named as market's failures, he neglected the downsides of imperfect competition in transnational economies. Namely, he would rather emphasise how protectionist traits of international trades such as limited mobility of capital out of the national boundaries, could boost the national economy by retaining resources (e.g., savings) that would otherwise be directed to and absorbed by foreign economies. Nevertheless, the formulation of evolutionary theories would have redefined the spatial and temporal boundaries of such reasoning, decomposing the national aggregate into sub-groups or districts, who would be facing an analogous problem with respect to resources retention. Moreover, the advent of free trade areas would further reshape the dynamics of international competition in an evolutionary perspective.

Smith's insights were later refined by theorists like Arrow (1951) and Debreu (1959), observing in the Fundamental Theorems of Welfare Economics that an economy based of competitive markets would always yield Pareto efficient ¹outcomes (first theorem), which can be attained through the price system (second theorem). Hence, the government's task would be to level out the effects of imbalances among citizens' initial endowments and other market failures² through lump sum transfers (subsidies and taxation), acting as incentives or disincentives for the individuals to engage in certain behaviours. In this way, the extent of government intervention would leave large margins of manoeuvre for the forces of competitive markets to adjust individual behaviour according to the pursuit of self-interests, yet it would closely depend on it.

Income taxes like the NIT (negative income tax) proposed by Friedman (1980, 1987, 2002) — one of the most influential economists in American history, also due to his role as advisor to President Reagan — provide an example of means of redistribution of wealth. Individuals whose earnings fall below a threshold level can be provided with subsidies that either “replace” (if

¹ An economy in Pareto-efficiency, by definition, is in a condition of equilibrium from which no further improvements can be obtained without causing the consequent worsening of some individuals or groups in the economy (Varian, 2010).

² E.g., externalities (like pollution), natural monopolies, and public goods (Bator, 1958).

they have no income at all) or top up their income. On the contrary, progressive income taxes can be paid by individuals whose earnings are above a threshold level, in such a way to not disincentivise individuals to either enter or remain in the labour market.

The welfare state can be represented as a three-dimensional space where the state and the market interact in such a way to create welfare and enhance its effects on social stratification and social right (Orloff, 1993, Esping-Andersen, 1990, Korpi, 1989). In general, a key feature of the welfare state is its commitment to redirecting market forces towards a more equal redistribution or a more efficient allocation of resources (Ruggie, 1984). Moreover, some economic models like that proposed by Esping-Andersen (1990) extend their focus on the effects of welfare policies on de-commodification of labour (Orloff, 1993). In this perspective, welfare policies can also be regarded as a mean to limit the sensitivity of labour to market's fluctuations.

Although the Obama administration may constitute one of the few exceptions in American history, both policy-makers and public opinion have generally disregarded the warnings signs of market failures — even when the annex risks, causes and consequences were made apparent by influential economists actively involved in the highest spheres of politics. Welfare policies would rather be seen as a threat to national economy, left in the hands of the imperfect markets' forces to stand crucial historical tests such as the Recession, the Great Depression and the 2008 global crisis.

What seems like blind faith in the power of competitive markets may be rather the result of the US historical thrive to take the distance from the often times overly institutionalised markets from overseas and — mostly — to a fierce opposition to communist economic models. In addition, a prolific tradition of eminent scholars and theorists fomented public opinion and policy-makers' suspicions of welfare policies. Namely, in the late fifties, the

Chicago school's macroeconomic theory³, based on economic liberalism and free markets (Kaufman, 2010), deposed the mainstream Keynesian models. The new approach relied on the markets' self-regulating mechanisms, so that both individual and aggregate demand and supply would adjust according to either consumers' utility (or well-being) maximisation functions or firms' costs minimisation function. In either case, the consistency of this type of models rested on the basic assumption of rational expectations of all economic agents. In other words, the modern doctrine would reject and differ from the Keynesian overrated perspective on the role of the State within the economy, limiting government intervention to money supply — this school of thought became known as monetarism thereof.

In the mid-1970s, within the Chicago school arose the juxtaposition of monetarism to the so-called new classical macroeconomics, built upon microeconomics findings and deeply rooted on hence on rational expectations — and rational behaviour — of each economic agent involved in the economy. This means that all individuals would act according to the rational solution of their optimisation problem, for which the individual's utility (or well-being, or satisfaction) gained from choosing a level of consumption x of a given good is maximised at level $x^*(p, E) = \arg \max_{x \in B(p, E)} \{u(x_i, B_i, E_i)\}$, under a budget constraint B dependent on prices p and income levels. Since each individual maximises his utility, collective utility would hence be maximised as well, through an aggregative mechanism of individual functions⁴.

These considerations rest on further implicit assumptions prescribing that all individuals are endowed with the same analytic skills and have access to the same quality and amount of information relevant to the optimisation

³ The terminology was coined from the University of Chicago department of economics, which detains the higher number of Nobel Prizes laureates record, loosely followed by the "rival" current exponents from the MIT. Among others, prestigious proponents of this neoclassical school of economic thought ignited by the so-called "Chicago boys" are F. Knight and his pupils G. Stigler and M. Friedman (who received the National Medal of Science and the Presidential Medal of Freedom by President Reagan in 1988), R. E. Lucas, G. Becker, and R. Coase.

⁴ Individual preferential orderings can be aggregated through a summation, or sequential product, or as a weighted average, upon a cumulative pattern (Varian, 2010).

problem. Additionally, micro-economic fundamental axioms⁵ on preferences legitimate classical, Keynesian, new classical and monetarist theories to treat the economic system as some sort of aggregate-thinking-entity, who could logically be expected to behave as the uniformed personification of all its basic rational units, without deviating much from their individual reasoning.

A major fault in these logic is theorised by Arrow's impossibility theorem⁶, also known as Arrow's paradox (1950), which provides a formal explanation to empirical systematic failures. The theorem applies both to decisional and voting systems and it shows how, under certain conditions (e.g., non-dictatorship), individual preference orderings do not necessarily reflect aggregate ones (and *vice versa*). This means that — even in absence of violations of the hypothesis of rational behaviour — aggregate utility would not mirror disaggregate outcomes of individual optimisation problems.

As for policy-makers' rationality endowment, Milton Friedman (1962, 1970) would cast shadows on government institutionalised markets observing that “*the world runs on individuals pursuing their self interests*” and “*the greatest advances of civilisation (...) have never come from centralised*

⁵The axioms on preferences necessary to derive the associated utility function are:

- i) transitivity: if no equality hold for all triplets (x, y, z) , $x > y$ and $y > z$, then $x > z$;
- ii) completeness: for all pairs (x, y) it is possible to state that either $x > y$ or $y < x$, or else $x = y$ (Varian, 2010).

Additional axioms are those of continuity as a sufficient condition to preferential ordering (Lope, 2012), homogeneity of degree one, reflexivity — redundant to transitivity (Mas-Colell et al., 1995), and convexity.

⁶The aggregation of individual preferences is mapped by the social welfare function, defined as $W: L(Y)^N \rightarrow L(Y)$, where $L(Y)$ is the set of complete linear orderings of the feasible outcomes Y expressed by N voters (or according to N decisional criteria, depending on whether the theorem is applied to voting systems of choice theory). Also, (R_1, R_2, \dots, R_N) is the N -tuple preference profile of the voters. If Y -set contains more than two elements, then:

- i) unanimity (or weak Pareto-efficiency): if $y_1 > y_2$ for all R_1, R_2, \dots, R_N , then $y_1 > y_2$ for all $f(R_1, R_2, \dots, R_N)$;
- ii) non-dictatorship: no individual $i \in \{1, \dots, N\}$ such that for each $(R_1, R_2, \dots, R_N) \in L(Y)^N$, $y_1 > y_2$ would imply that $y_1 > y_2$ for $f(R_1, R_2, \dots, R_N)$ too;
- iii) and independence of irrelevant alternatives: for two preference profiles (R_1, R_2, \dots, R_N) and (S_1, S_2, \dots, S_N) such that all individuals would rank the feasible outcomes as $y_1 > y_2$ as in $f(R_1, R_2, \dots, R_N)$ as in $f(S_1, S_2, \dots, S_N)$; become incompatible conditions.

government.”⁷ These considerations along with his seemingly tautological quote “*governments never learn. Only people learn*” may be explained by a further line by Friedman (1962, 1970), appointing that “*nothing is so permanent as a temporary government program*” possibly addressing some typical traits of a democracy that seem to defeat its policies efficacy, since administrations with different — or even opposite — political orientations are likely to alternate over a relatively short period of time, amending or rebuilding on previous legislation. Namely, changes in public policies’ management and targets may restrain the “natural” adjustments driven by competitive markets, which would take place had the markets been freed from central regulations. In this perspective, if governments and central banks would commit to consistently pursuing the fight to inflation as their core goal (hence intervening in the market’s dynamics only through monetary policies), the effects of the political changes would be less of a damage to the economy.

In any case, such a policy’s effectiveness may still be weakened by factors like the overly-stringent rational expectations assumption or other exogenous variables influencing the self-regulating mechanisms of the market (e.g., unpredictable oil shocks, natural phenomena, and, at some degree, multipliers’ and financial effects). Had any of these circumstances occurred, Keynesians would argue that the central authority shall guide the economy through the crisis by manipulating the aggregate demand. In the eye of monetarists, this approach would very much resemble communists’ economic strategy consisting of public commissions and investments on strategic sectors boost the economic recovery. However, monetarists would tolerate the presence of central authorities in the economy as pre-existing unavoidable condition, but advocated a *laissez-faire* attitude on behalf of the State and central bank, who ought to monitor the money supply, in order to let the markets free to self-

⁷ For the sake of completeness and as far as the basic assumptions on the accessibility and processing of information are concerned, such statement may be considered as accurate as its negation (e.g., recall Roman public infrastructures, artistic heritages and modern discoveries that have come from entities like NASA that may not have existed unless commissioned by a central power).

adjust towards their equilibrium, without the biasing effect of inflationary forces⁸ (Friedman, 1970).

With the 1973-75 recession, monetarists and new classical economists seemed to have had their point proven about the inadequacy of Keynesian-like public policies adopted in several countries (US included) in the post WWII. Namely, in 1973 an oil shock scattered the neoclassical confidence of the role of the State in leading of the markets towards Pareto efficiency by manipulating the demand (e.g., through public commissions). Not only Keynesian policies were found ineffective against the price hike and stagnant economic growth after the oil crisis, but also the mutually exclusive relation between the presence of high inflation and high unemployment rates stated by Phillips curve⁹ was found defective against the rise of stagflation (i.e., the contemporaneous presence of high inflation and unemployment rates, first observed in the '70s American economy).

Economists from different schools of thought (including Keynesian and new Classical) built upon Philips' model, in the attempt to fit it to empirical evidence. The studies led to the theorisation of the existence of a natural rate of unemployment (Friedman, 1968; Modigliani, Papademos, 1975), which concept would become known as NAIRU (Non-Accelerating Inflation Rate of Unemployment). Both the natural unemployment rate and NAIRU (Coe, 1985) indicate a physiological — hence tolerable — level of unemployment in all economies, passed which threshold, inflation rate would automatically rise undesirably. This theoretically odd relation between real and nominal phenomena (unemployment and inflation respectively) would be justified by the effects of labour force's rational expectations about wages fluctuations in response to inflation changes. The government would be thus supposed to choose a trade-off according to the NAIRU's threshold, pursuing the

⁸ *"Inflation is taxation without legislation"* (M. Friedman, *The Counter-Revolution in Monetary Theory*, 1970)

⁹ There are few formulations of the mathematical model stated by A.W. Phillips (1914-75), who observed a historical inverse relation between inflation and unemployment rates (Phillips, 1958). I. Fisher had already hypothesised the existence of such relation in his work from the 1920s.

stabilisation of *either* inflation (Friedman, 1968) *or* unemployment level (Lerner, 1951).

Despite the fact that Phillips' hypothesis was only validated by a data set of the *change* rate of inflation and unemployment rates in the US from 1953-92 — rather than in its original formulation (Ormerod, 1993) — the formal strength of the so-called “freshwater economics¹⁰” as opposed to the old-fashioned Keynesianism was presumably found more appealing for both governmental authorities and privates — and particularly to Republican proponents like President Reagan. Namely, the new doctrine spread rapidly throughout the US and the allies' economies, fomenting the rise of capitalism against communism. All along, the assumption of rational behaviour remained the faulty pillar of economic models, although repeatedly breached by empirical evidence.

Expanding branches such as behavioural economics, cognitive psychology, information theory and neuroscience have brought innovation and theoretical adjustments to orthodox economic doctrine, by building upon milestone findings¹¹ like Williamson's transaction costs (1981), and Simon's bounded rationality (1957). The concept of transaction costs was allegedly portrayed for the first time by J.R. Commons, who assessed that “[*T*]transactions intervene between the labor of the classic economists and the pleasures of the hedonic economists, simply because it is society that control access to the forces of nature, and transactions are not the ‘exchange of commodities’ but the alienation and acquisition, between individuals, of the rights of property and liberty created by society, which must therefore be negotiated between the

¹⁰ As opposed to “saltwater” departments of Economics such as that of Harvard, Princeton and MIT, whose Nobel Prize winner scholars are (among others) P. Samuelson (awarded the National Medal of Science with public commendation by Democratic President Bill Clinton in 1996), W. Phillips, O. E. Williamson (student of Coase), P. Krugman, R. M. Sollow and his pupil J. Stiglitz, and J. Nash.

¹¹ Although the above mentioned studies by Nobel Prize-winner economists are certainly accurate and theoretically immaculate, no comprehensive analysis of the targeted phenomena has been provided yet. In fact, preponderant components of decisional processes (e.g., emotions) are systematically neglected by mainstream economic theory, which remains instead anchored to its traditional assumptions on economic agents' rationality, despite the eloquent collection of failed empirical tests gathered over time.

parties concerned before labor can produce, or consumers can consume, or commodities be physically exchanged” (Commons, 1931, pp. 648-657).

Continuing, Coase (1960) would refine Common’s original concept in his paper *The Problem of Social Cost*, contextualising transaction costs within the bargaining process underlying the maximisation of social welfare through the reallocations of resources. Aligned with these perspective, Dahlman (1979, pp. 141-162) would compare transaction costs to externalities, observing that the latter “*represent the first approximation to a workable concept of transaction costs: search and information costs, bargaining and decision costs, policing and enforcement costs.*” Further, Cheung (1987, pp.55-58) would define such kind of costs as externalities stemmed from the presence of institutions in the market.

The phrasal “transaction costs” was later popularised by Williamson¹²’s works like *Transaction Costs Economics* (1981, pp.548-577), according to which, frequency, specificity, uncertainty, limited rationality and opportunistic behaviour are all determinants of transaction costs vector. The argumentation refers back to the bounded rationality theorised by Simon (1955, 1982, 1991) as a behavioural pattern or decisional criteria exhibited by those individuals who “*experience limits in formulating and solving complex problems and in processing (receiving, storing, retrieving, transmitting) information.*” Namely, he argued that economic theory and other social sciences assume human behaviour to be rational *on average*, which leads to unrealistically approximated models that fail to produce reliable predictions (Klaes and Sent, 2005; Barros, 2010). The underlying reasoning would make notice that the agents’ utility optimisation problem is usually carried out based on heuristic criteria rather than mathematical or logical orderings (Olson, 1971). Yet, Simon (1990) noticed that often times efficient economic outcomes are indeed achieved, thanks to the influence of the environment and other agents’ actions, which ultimately succeed to compensate the bounded rationality’s deficiencies. According to Simon (1990) these compensatory deviations from the classical rational reasoning produce both unexpectedly positive outcomes as well as

¹²Williamson won the 2009 Nobel prize memorial with E. Ostrom.

negative ones (e.g., as a result of altruistic and opportunistic behaviours respectively).

Despite recognising the gaps between orthodox economics and empirical evidence — particularly emphasised by the latest scientific findings — the American policy-makers do not seem to have acknowledged the conceptual fallacy underlying and undermining traditional economic models just yet. In fact, American history provides various examples of social policies (such as those enhancing protection against discriminatory conducts in the market place) being disregarded by policy-makers and voters too. Nevertheless, few exceptions to this tendency can be found from the late Twenties to the recently deposited Obama Administration.

The upstream towards the construction of a welfare system can be dated back to 1929, when the aftermath of the Great Depression paved the way to the New Deal¹³, shifting the focus of the long-held debate concerning the milestones of the American capitalism from *whether* the government shall intervene in the economy's (dys)functioning, to *how* it shall do so. Among the set of social policies enacted under the Second New Deal, the most important were AFDC (Aid to Families with Dependent Children), TANF (Temporary Aid to Needy Families), Social Security and Medicare. The AFDC was a non-contributory program consisted of monetary transfers to mothers and dependent children, based on their number. Contrarily to the Social Security Act, the AFDC program crashed against fierce unpopularity and was hence replaced in 1996 by the Temporary Aid to Needy Families (TANF)¹⁴, signed by President Clinton as part of the Personal Responsibility and Opportunity Reconciliation Act.

The above mentioned Social Security program enacted in 1935 by President Roosevelt targeted the elderly population (over 65 years of age) who had been thrown out of the labour market with not enough savings to make it through their retirement. In addition, the newly introduced payroll taxation

¹³ Particularly, the Second New Deal, approved under the President F. D. Roosevelt's first term, between 1935 and 1938.

¹⁴ The TANF's benefits would be granted to families in need for up to 2 years continuously, and for up to 5 years cumulatively.

would systematically detain 7.65% of the working payroll: 6.2% would be redirected to social security funds (the equivalent nowadays pensions) and the remaining 1.45% to the first Medicare program, a third-party payer for medical services for elderly citizens who could not afford private health coverage. These programs have survived up to present date, and the 45 million cap of beneficiaries of social security was hit in 2015. A number that is estimated to be on the rise, since “baby boomers”¹⁵ are approaching retirement age, while the cohort of younger contributors is shrinking and migratory dynamics are unable to contrast this tendency (US Census Bureau, 2011, 2010; American Community Surveys, 2010-2015; Decennial Census, 1970, 1990, 2000; Gibson and Lennon, 1999).

The economic relevance of the demographic phenomenon described above is to be juxtaposed to its political implications. Namely, in 2016 an uprising trend¹⁶ has been diagnosed by polls and research on participation to political life, according to which the elderly tend to show higher participation rates as compared to younger potential voters. The estimated growth of the block covered by Medicare program would add up to the already increasing financial burden associated both to demographic factors and to the growing cost of therapies. Yet, the financial load associated to welfare¹⁷ policies, is only one of the factors that have long prevented a timely implementation of such kind of programs — or reduced their range of applicability.

A major role has in fact been played by the widespread faith in economic theory’s dictates as much as by the perceived cost-opportunity of institutional

¹⁵ The so-called “baby boomers” were born between 1946 and 1964, during the post World War II demographic boom. According to the US Census Bureau, the baby-boomers constitute “*one of the largest generations in US history*”.

¹⁶ Citizens under the age of 30 years old are the least politically involved (both as candidates and as electors), although a reversing tendency has been observed in young electors’ behaviour since 2004 presidential elections. By contrast, citizens whose ages range between 35 and 65 are the most active. (*Age and Participation*. Boundless Political Science. Boundless, 20 Sep. 2016)

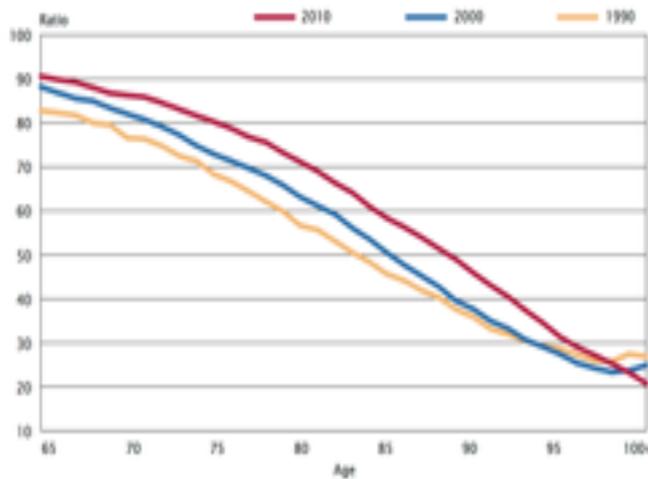
¹⁷ Since their first draft, welfare programs have aimed purposefully at increasing opportunity (boosting and spreading education throughout all population ranges), health service quality and delivery, and promote social security. More popular targets of welfare are the promotion of equal opportunities throughout different demographic categories and the assistance to the economically weak population.

interferences (or investments) in the free market. The core of debate about welfare policy namely concerns the rightfulness of its purpose to protect specific demographic blocks, who find themselves in vulnerable positions, or exposed to higher risks and insecurities as compared to the majority (e.g., job loss, health conditions, poverty, disability, discrimination, etc.). On the other hand, more popular targets of welfare address the promotion of equal opportunities (e.g., access to education) throughout different demographic categories, as well as the assistance to the economically weak population.

The 2001-02 recession followed by the collapse of the mortgages pyramid scheme in 2007-08 constituted a turning point of the historicisation of political, economic and philosophical debate on welfare. The aftershock of the 2007 crisis echoed up present day, having undermined what had been the pillars of the American economy. Notwithstanding, the bankruptcy of Lehman Brothers (filed in September 2008, two months before the presidential election) became probably the most evocative symbol of what turned into a worldwide-spread crisis. In that circumstance, the American voters actively contributed — through taxation revenues — to rescue the affected banks and financial intermediaries who had previously contributed to build up the mortgages pyramid that would have crashed on the whole economy.

The well-known “housing bubble” and the consequent free-fall of returns on investments opened the gates to a financial crisis that led to a 7 trillion dollar loss in the stock market by 2012. By 2008 about 2.5 million job losses were estimated, mostly on construction and factories workplaces. Not only the US GDP had dropped by 6% between the end of 2008 and the first trimester of 2009, but also, within the first semester of 2009 the labour market demographics characteristics had changed structurally: for the first time in American history females had outnumbered males as active paid workforce (Kochanek et al., 2011).

The gender gap has been shrinking over the past decade, although females would still outnumber males in the older ages — mainly due to biological factors. As a matter of fact, the sex ratio (see figure on the next page) at birth in the US is about 105 males to 100 females (i.e., more males than females are given birth to) but it declines inversely proportionally to ageing. In other

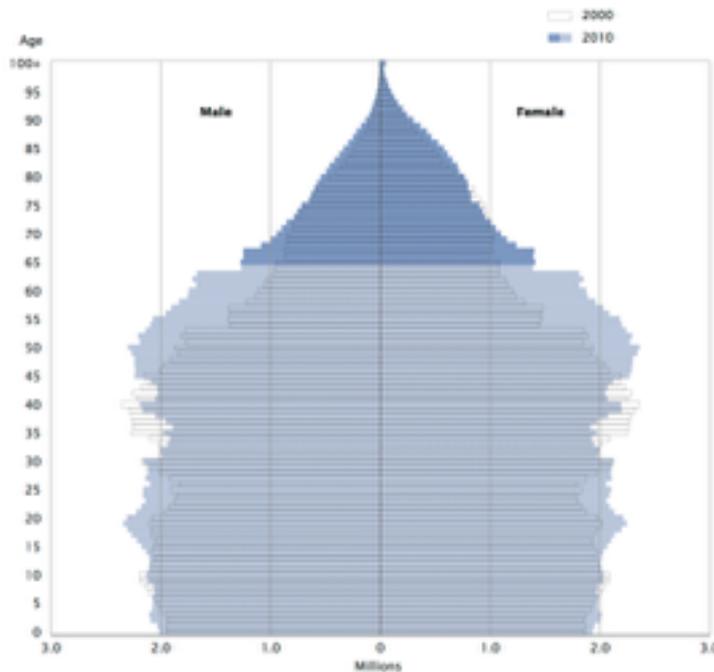


Sex ratio by Age: 1990, 2000, 2010. Note: Sex ratio defined as the number of males over females. Sources: U.S. Census Bureau, 1990 Census Summary File 2C; Census 2000 Summary File 1; 2010 Census Summary File 1.

words, the initial numerical advantage of the male cohort deteriorates over time, when females begin to show lower mortality rates at almost every age, resulting in women outnumbering men in older population ranges

(Kochanek et al., 2009).

Given the current demographic pyramid scheme (see figure below), a further growth of the elderly population “is both highly probable and unprecedented in the United States” (US Census Bureau, 2011). At this point, it is trivial to deduce why such demographic phenomenon has become crucial factor to policy-makers either campaigning or planning on a farsighted allocation of resources. Namely, demographic analyses provided by the US Census Bureau were exploited by the Equal Employment Opportunity



Population by Age and Sex: 2000 and 2010. Light blue represents ages from 0 to 64; dark blue, ages 65 years and over (as from 2010 Census). Sources: Census 2000 Summary File 1; 2010 Census Summary File 1.

Commission (EEOC) as well as by the Department of Health and Human Services to organise the funding of services to low income elderly (under the Older Americans Act), and by federal and local policy-makers planning on “health service

centres, retirement homes, assisted living or skilled-nursing facilities, transportation availability, Social Security, and Medicare benefits” (US Census Bureau, 2011). Moreover, the forecasted amount of people eligible for Social Security and Medicare benefits is computed on the basis of the same data set — despite the complexity of variables such as labour market’s fluctuations and health trends determine a latent overall unpredictability of the programs’ beneficiary cohort size.

All considered, what has been the biggest crisis in modern history since 1929 has likely encouraged the Obama Administration to take a step back from the Chicago school’s prescriptions. In this scenario, President Obama’s first mandate crystallised its electoral promises on welfare in regulations such as the Fair Pay Act¹⁸ of 2009 — aimed at providing female employees with a more straightforward access to judicial means of protection against discriminatory conducts (such as unfair pay) in the workplace — and the Affordable Care Act of 2010 and its annexed mandates (e.g., the so-called Contraception Mandate, which reversed a preexistent executive order limiting reproductive liberties in several states). Nevertheless, it is worth mentioning that in 2011 the Senate’s activity is recorded to have hit its lowest productivity, indicating the weakening of the Congress’ support to its President’s initiatives.

ii. The ACA’s welfare features.

Various features of the ACA are revealing of its welfare core: not only it perpetrates the homogeneous redistribution of health through a more

¹⁸ On the 29th of January 2009, President Obama signed into law the Lilly Ledbetter Fair Pay Act, which empowered women to recover wages lost to pay discrimination (the estimated median yearly wage of a female full-time employee is \$39,600, 21% lower than her male peer’s median earnings, \$50,400). In April 2014 President Obama signed an Executive Order to prohibit retaliations by federal contractors against employees who file complaints upon unfair compensation, and a Presidential Memorandum, to instruct the Secretary of Labor to perfect the collection of summary data on compensation paid to employees of federal contractors, including by race and gender (Garunay, 2016).

widespread coverage of medical care, but it also does so eliminating some factual barriers due to demographic and economic factors influencing health outcomes between different population blocks. With the Patient Protection and Affordable Care Act of 2010, or ACA (better known as Obamacare, after the name of President Obama) the Congress took a stand on the long held issues of accessibility, quality and affordability of healthcare. Namely, the reform stemmed from systematic market failures causing the endurance of inefficient allocative patterns that were found to prevent a homogeneous, sustainable improvement of the Americans' health status (Obama, 2016; Himmelstein et al., 2009). In fact, recent studies have validated the U.S. population's discontent about critical aspects of national healthcare system (Harvard T.H. Chan School of Public Health Poll, 2015). For example, the weight of medical expenses was found to be a concerning burden to economic growth potential (UNFPA, 2014). Externalities from the US healthcare system flaws also proved detrimental to subsystems like the labour market, for close, twofold relation between health outcomes and factors like employment status (particularly, terms and conditions of employment), income range, credit history, and area of residence.

The primary target of the reform is healthcare coverage expansion. Under the Obamacare, all insurance companies are denied to drop clients or apply price discrimination depending on pre-existing or developed conditions. In addition, individuals under the age of 25 are covered by their parents' insurance plan. Moreover, the ACA's Individual Mandate states the compulsoriness for all residents to purchase coverage from private insurances (in case of employer-provided insurances unavailability) or incur in an increasing penalty to be paid annually. Those who cannot afford health insurance, can still apply for governmental subsidies to cover the costs of providing a private coverage. Such healthcare plans are available on a Marketplace online for both consultation and purchase in order to facilitate the circulation and exchange of relevant information, while favouring competition and hence the affordability of the products.

In this perspective, the Obamacare reform set the basis for a wider expansion of universal health coverage, encouraging future policy-makers to

reconsider the possibilities withheld by welfare and social policies. For instance, the removal of CAPS and price barriers are some of the ACA's cost saving manoeuvres aimed at supporting the affordability of health insurances for wider income ranges. Equality of access and homogeneity of quality medical assistance are indeed pursued via the expansion of Medicare and Medicaid programs, addressed to support the elderly and poor demographic blocks respectively.

Namely, the ACA's primary targets are low- and moderate-income residents, that constituted almost three quarters (roughly 37 million people) of the whole uninsured cohort (49 million) at the time of the law enforcement (Obama, 2016). Studies from Harvard University (2015) and other relevant sources suggested that low health insurance rates among certain population blocks may be a major cause of the widespread fragmentation of medical services' access for various income ranges. In other words, the lack of a universal healthcare system and the faults of the existing one yielded a generalised insecurity concerning the likelihood of getting access to adequate medical care when needed.

Although such precariousness does particularly affect the economically weaker demographic blocks (often located in rural areas), it also virtually threatens income and wealth stability — and health in the first place — of other population groups, mainly due to the increasing cost of medical procedures. For example, the proportion of personal bankruptcies due to medical expenses has raised from 8% in 1981 to a 62.1% in 2007, where *“most medical debtors were well-educated, owned homes, and had middle-class occupations. Three quarters had health insurance.”* Medical expenses were found to be a direct cause of bankruptcy for one out of four senior citizens (over 65) in 2013, whereas it constituted a financial struggle for a growing proportion of non-elderly adults, that rose from 34% in 2005 to 41% in 2007 (Himmelstein et al., 2009). Since then, the costs of healthcare, the cohort of un- and under-insured American residents, and the incidence of the healthcare costs as being a major cause in such bankruptcy files, have all been increasing at a growing rate, at least until the commencement of the financial crisis. (Squires and Anderson, 2015)

Continuing, a study conducted in 2007 on 639 patients (Himmelstein et al., 2009), whose medical care contributed to bankruptcy, found that the largest single out-of-pocket expense was due to hospital bills for 48% of respondents, followed by prescription drugs, for 18.6%, doctors' fees, for 15.1%, and insurance premiums, for 4.1%. The study also investigated the severity of the incidence of medical events on the respondents' families. A medical event was found to have caused a layoff to 24.4% of the interviewed, and that of a family member in 37.9% of cases. Within this group, 62.9% did not get subsequently re-employed — one out of five dismissed from job was a caregiver (Himmelstein et al., 2009).

A large set of data assesses the costs of medical assistance to be disproportionately high as compared to the quality of the purchased services and health outcomes. As a matter of fact, the WHO¹⁹ reported that the total spending on healthcare in the US has experienced a cumulative increase of about a 20% since 1998 (inflation adjusted on 2000 price level), accounting for 15.2% of its GDP in 2008, and exceeding that of any other high-income country (WHO, 2011). The upward trend of healthcare costs and spending endured to present date — although at a slower pace — reaching 17.1% of US GDP in 2013 (Obama, 2016). According to a cross-national analysis carried out by the Commonwealth Fund among 13 high-income countries, the US had maintained their top rank as the highest spender on healthcare in 2013, although being the only country not providing a publicly funded universal medical care system. Furthermore, the US expenditure level exceeded by a scarce 50% that of France, the second higher-spender, and almost doubled that of the United Kingdom — which accounted for 11.6% and 8.8% of their GDP respectively (Squires and Anderson, 2015).

¹⁹ World Health Organisation was established in 1948 as a United Nations agency aiming to attaining the “highest possible level of health”. The WHO's activity of surveillance over and promotion of public health objectives — coherently to assessed health trends and critical matters — is carried out by: providing the member States with technical support, as well as leader- and partner-ships; organising the research agenda and the collection, exploitation, and diffusion of relevant knowledge; drafting standards and monitoring their implementation at international level; promoting ethics- and evidence-based policies, along with the development of sustainable institutional capacity (WHO, 2012).

Such a counterintuitive ranking of the US in healthcare public spending may be imputable to the widespread use of costly technological procedures and devices (e.g., MRI or ECG) rather than to any proxy of a wide spreading, worsening public health standard (such as more frequent or longer hospitalisations). On the other hand, a major role in maintaining the US in the top five countries with the higher per capita expenditure on healthcare seems to have been played by a fallacy in the relevant market structure.

American policy-makers are well-known in modern history for having disregarded other leading economies characterised by a universal public-funded healthcare. As opposed to institutional, conservative-corporatist welfare states like most European countries would systematically extend public programs to all strata of the population, Esping-Andersen (1990) would collocate the US into the liberal capitalistic regimes, in the residual welfare states' categorisation²⁰. This type of welfare states would merely react to market failures, narrowing public intervention to assist specific groups such as minorities (Orloff, 1993). Ironically, the lack of top-to-bottom “paternalistic” interventions²¹ in the US healthcare system seems to have disfavoured or even ruled out competition in the insurance market (Obama, 2016), sustaining both medical care prices and public spending at higher levels than in other comparable economies (Hamilton et al, 2013).

Large sample studies on the American pharmaceutical industry have highlighted typical traits of its structure that deviate from the paradigm of the American free market (McGrath, 2004). For instance, the existence of considerable barriers at the entrance — due to the enormous bargain of knowledge and particular equipment and machineries to establish a business in the field — is alone a factor that makes the pharmaceutical market at least peculiar with respect to the classic American free trade model. It seems

²⁰ According to Esping-Andersen (1990), there are two opposite types of welfare states, residual and institutional. These two can be further categorised into “three worlds of welfare capitalism”: liberal (US, Canada, Australia), conservative-corporatist (Austria, France, Germany, Italy), and social-democratic (Nordic countries).

²¹ In *Capitalism and Freedom*, Friedman would claim that “[t]he existence of a free market does not of course eliminate the need for government. On the contrary, government is essential both as a forum for determining the ‘rule of the game’ and as an umpire to interpret and enforce the rules decided on” (M. Friedman, 2002 ed., p. 15).

reasonable to assume that — at least within the medical field, where the background knowledge preliminary to any cost-efficiency improvement or innovation is considerably high — a certain degree of cooperation even

% of respondents who rated the emergency room care as excellent, good, fair, or poor				
Respondent's income level	Excellent	Good	Fair	Poor
Low (< \$25k)	34%	27%	26%	13%
Other > \$25k	42%	36%	12%	9%

NRR, Robert Wood Johnson Foundation, and Harvard T.H. Chan School of Public Health Poll, Patients' Perspectives on HC, September-November 2015

between direct competitors may be necessary to sustain or even boost competitiveness and the creation of value. For example, the pharmaceutical sector has experienced the formation of clusters and districts of specialised competing firms strongly interconnected with one another. This phenomenon also appeared as consequential of the high cost of patents in the US, which results in even higher levels of drugs and therapies prices (Obama, 2016) — notwithstanding the side-effects onto the slow commercialisation process of generic brands.

It follows that, despite the US have persistently over-performed both in investment and public expenditure on healthcare, the mismatch with the relative health outcomes (such as life expectancy and generalised presence of chronic diseases) suggests that the system is consistently under-performing (Squires and Anderson, 2015). In the light of these remarks, President Obama has recently highlighted in his paper (2016) the opposition of pharmaceutical industry to any adjustment in drug pricing (as from Karlin-Smith and Norman, 2016). On the other hand, he praised the cooperative actions of those organisations and groups that supported the restructuring of federal subsidies and payment methods.

Consistently to his considerations on accessibility to and affordability of the US healthcare system, President Obama (2016) also advocated further reforms in the direction of more institutionalised welfare policies — recalling Espin-Andersen's (1990) categorisation — and the enactment of a set of measures aimed at cutting off prescription drug costs, expanding the ACA's

Health Insurance Marketplaces through the provision federal subsidies, and introducing a public plan option to enhance competition in those areas lacking of it. According to the Congressional Budget Office (2013), strengthening and complementing the Marketplace approach with the introduction of a public plan could benefit both consumers and government savings, while boosting efficiency and quality of the medical care options supply for all demographic ranges. Namely, a poll conducted by the Robert Wood Johnson Foundation in 2015 concerning self-reported outcomes of different medical events, revealed the existence of a low-income gap in health care, which results in a reduced likelihood of low-income patients to access adequate treatments (data summarised in *Tables 1, 2*). Interestingly, the magnitude of the gap falls by 30-40% when low-income patients have health insurance coverage.

% of respondents reporting to be persuaded they would be able to get access to the best possible treatments, if they became seriously ill		
Respondents' income level	Respondents who feel <i>likely</i> to access the best treatment, if needed	Respondents who feel <i>unlikely</i> to access to the best treatment, if needed
Low (< \$25k)	67%	28%
Other > \$25k	81%	15%

NRR, Robert Wood Johnson Foundation, and Harvard T.H. Chan School of Public Health Poll, Patients' Perspectives on HC, September - November 2015

% of respondents who reported they could (or could NOT) have access to health care in the first 2 years after the ACA's enforcement in 2010.		
Respondents' income level	Respondents who <i>could</i> get access to healthcare	Respondents who could <i>not</i> get access to healthcare
Low (< \$25k)	76%	21%
Other > \$25k	84%	12%

NRR, Robert Wood Johnson Foundation, and Harvard T.H. Chan School of Public Health Poll, Patients' Perspectives on HC, September-November 2015

The resilience of the low-income gap to the introduction of health insurance unveils structural fallacies in the delivery system of health care — that goes beyond eligibility requirements set by insurance companies. Confirming evidence is found in the extent of the proportion of Americans

eligible for subsidies who decided to incur in the individual mandate's penalty and remain uninsured (75% uninsured of the remaining 10% uninsured) rather than purchasing health insurance. This trend may be partially explained by factors like financial debts, low savings rates, physical accessibility of the services or a widespread belief that insurances' premiums would unlikely correspond to relevant benefits. Indeed, up to present date, 10% of Americans remained uninsured, although 75% of this block is estimated to be eligible to fit in the ACA's coverage (Obama, 2016).

Continuing, 48% of low-income adults reported to have referred to the emergency room due to the impossibility to get health care services elsewhere in the moment of need — such proportion has increased as compared to previous analyses. Nevertheless, low-income patients rated emergency rooms the lowest among all other services (such as dental care, hospitalisations, etc.). This suggests that emergency room would not have been their first choice, had they been able to get access to an alternative healthcare provider. Yet, such a counterintuitive behaviour may find various rational, factual justifications: for instance, the appointment-based structure of most healthcare services may likely disfavour those clients working multiple jobs (or living in rural areas lacking in infrastructures) and hence be unable to schedule medical appointments, or to show up timely, or to complete long therapies. Following this reasoning, the Obamacare held in special consideration Community Health Centres, planning consistent funding to these mostly non-profit organisations located in the neighbourhoods, which are estimated to be serving 29 million American residents throughout the country.

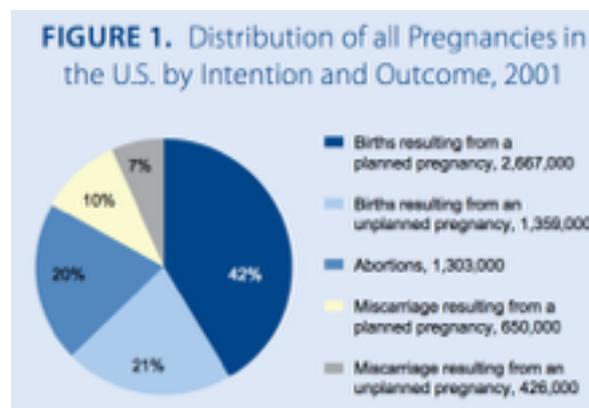
Finally, the Obamacare responds to the call for a wider reform to contain the socio-economic effects of the cohort of the “baby-boomers” born between 1946 and 1964. According to the USCB, the 50 million people currently reaching retirement age juxtapose to “greying workforce” issue, increasing the weight of age discrimination and equality of treatment and opportunity in the labour market. Namely, the US Census Bureau (USCB) expects the senior population to almost double its 2012 size, reaching 83 million over 65 American residents by 2050. The country is in fact experiencing a demographic transition, where the over 60 cohort outnumbers that of under

five, both due to an increase of life expectancy and a decrease in fertility rate — currently 0.2 points below replacement rate level, although the number of births per year is not decreasing (Hamilton et al., 2015).

Chapter 1 ~ Costs and benefits of Unintended Fertility Outcomes and Family Planning

All factors described in the previous section highlight the peculiar vicinity of the Obamacare to welfare policies, supporting the expansion and the protection of publicly funded programs like Medicaid, Medicare, Contraception Mandate, and Title X (Public Law 91-572, 1970)²², addressed to demographic blocks particularly vulnerable to the free market's commodification, such as low-income, elderly, and women.

The importance of publicly funded family planning rests upon the estimated amount of unintended pregnancies (i.e., either mistimed or unwanted, accounting for about 50% of all pregnancies) averted each year, that would otherwise have resulted in conspicuous social and financial burden (Guttmacher Institute²³, 2015). The side effects of unintended fertility outcomes ramify in several fields of the economy, amplified by the ongoing demographic transition. The propagation of the



²² As stated by the US Department of Health and Human Services (HSS), “*Title X is the only federal program dedicated solely to the provision of family planning and related preventive services*” (hss.gov/opa, 2017). It is ran by the Office of Population Affairs (OPA), which is also in charge of advising and reporting to the Secretary and the Assistant Secretary for Health on reproductive health. Since the services provided by (publicly funded) Title X clinics range from preventive screenings to sterilisation, and abortion (*not* covered by federal funds), the program has been fiercely criticised and attacked by pro-life organisations and interests groups as well as right-wing conservatives opposing the liberalisation of birth control in some cases regardless it being publicly or privately funded. Title X clinics serve mainly but not only (see Chapter 2) Medicaid enrollees.

²³ The Alan Guttmacher Institute (AGI) was founded with the name of Center for Family Planning Program Development in 1968 and housed within the Planned Parenthood Federation of America (PPFA). It was then renamed after one of the PPFA's former presidents and became an independent nonprofit policy research institute in 1977 the Institute's special affiliation with PPFA endures until 2007. Since the early 70s, the AGI has been publishing two peer-reviewed journals dedicated to “*the latest program- and policy-relevant findings on sexual and reproductive health*”: *Perspectives on Sexual and Reproductive Health*, and *International Perspectives on Sexual and Reproductive Health*, focusing on the United States and developed countries, and on developing countries respectively.

echoes of unintended fertility outcomes throughout the American economic system will be hence discussed both in terms of medical costs (and benefits) and social costs (and costs of opportunity), which not only do affect the female blocks, but also have repercussions on the whole population.

As a matter of fact, the costs associated with unintended pregnancies in the US were found beyond comparison with respect to the most expensive fertility control methods²⁴ (Trussell et al., 2009, 2010, 2012). The Guttmacher Institute (AGI, 2010), assessed that U.S. government expenditures on births²⁵, abortions and miscarriages resulting from unintended pregnancies amounted to \$21 billion in 2010 (Sonfield, Kost, 2010). In the same year the absence or suppression of public funding to family planning programs would have yielded an estimated 75% increase in public expenses due to unintended pregnancies (Frost, Frohwirth and Zolna, 2016). Continuing, in 2014, data showed, family planning services ran on federal funds contributed to an estimated 40% decrease in unintended pregnancy rate, avoiding roughly 2 million unintended pregnancies, 900,000 unplanned births and about 700,000 abortions (Frost, Frohwirth and Zolna, 2016).

Various sources found this type of estimates consistent in time and space both at national and international level. Yet, the magnitude of the impact of public family planning programs onto the American society and economy could only be fully understood if weighted by some crucial premises on the national healthcare system. Namely, Americans have access to health care primarily by enrolling in some indemnity plan that can be either employer-sponsored, or private individual coverage, or governmental programs. These plans prescribe enrollees to receive medical attention from a preferred provider, for which the out-of-pocket expenses will be partially or completely reimbursed according to the patients' health insurance's terms and conditions.

²⁴ As assessed by Trussell et al. (2009, 2010, 2012), the most expensive but also cost-efficient (non invasive) contraceptives in the US are levonorgestrel (LNG)-20 intrauterine system (IUS), and copper-T intrauterine device (IUD), costing on average US\$ 930 and US\$ 647 for installation (once every 10 years respectively in 2008).

²⁵ According to Sonfield (2010), the costs of 68% of unplanned births in 2010 were covered by public funding.

According to the 2002 Employer Health Benefits annual survey, medical services are increasingly delivered through managed care providers, that particularly favouring the sub ministration of preventive services, and categorise as health maintenance organisations (HMOs), point-of-service (POS), and preferred-provider organisations (PPOs) (Sonfield et al., 2004). HMOs restrict access to a certain set of providers and services, whose care provision can yet be extended at little additional costs beyond the insurance plan's monthly premiums. POS plans work analogously, besides offering broadened access to providers and services at a higher cost. Finally PPOs and indemnity plans are similar in terms of benefits, but encourage clientele to refer *“to providers with whom the insurance company has negotiated discounts”* (Sonfield et al., 2004, p.72)

Approximately 23% of insured non senior Americans (younger than 65 years of age) relied on individual coverage (6%) or government programs²⁶ (17%), whereas the remaining 77% are covered by their own or a relative's employer-sponsored plan the remaining. Specifically, employer-sponsored insurance covers more half of the non elderly population (Kaiser Commission on Medicaid and the Uninsured, 2015). Employee-coverage can either consist of insured plans, purchased from insurance companies under state law, or self-insured plans, regulated by federal legislation.²⁷ Moreover, the latter category withholds a higher risk to the employer, which is directly held accountable for some or all medical fees of each employee.

In most cases private insurance plans do not include coverage for reproductive health care, contrarily to government programs, that have traditionally guaranteed coverage for such provisions. Namely, since 1998, FDA approved prescription birth control methods have been included by state law in the list of prescription drugs mandatorily covered by insurers in more than half the states (Sonfield, Benson Gold, Frost, 2004; AGI, 2003; Atkins and Bradford, 2014). By 2003, almost all five most common reversible

²⁶ e.g. Medicaid program, providing health care coverage to eligible low-income enrollees.

²⁷ According to a 2001-2002 survey on a nationally representative sample of 205 health care insurers, individuals on employer-sponsored coverage are enrolled in insured- or self-insured plans in equal proportions, 50% for each category (Henry J. Kaiser Foundation and HRET, 2002).

contraceptive prescriptions were included in at least 86% of typical plans (Sonfield et al., 2002). Annual gynaecological exams and oral contraceptives were also almost universally covered among all types of insurance plans, similarly to male or female sterilisation (89%) and in-clinic abortion (87%). Conversely, coverage for other types of contraception would lower depending to the type of provider²⁸ (Sonfield et al., 2004).

Although information on the responsiveness of health coverage plans to state mandates is fragmented and scarce, data collected from 2001-2002 survey on a nationally representative sample of 205 health care insurers suggests that the impact of state mandates accounted for up to 40% on the observed increase of hormonal contraception coverage from 1993 to 2002 (Sonfield, Benson Gold, Frost, 2002; AGI, 2003). Coverage of oral and injectable contraceptives was found extremely low in 1993 (32-59%), but significantly higher in 2002 (78-97%). Furthermore, states with mandates would exhibit a higher likelihood (87-92%) of including in health care plans the five leading contraceptive prescriptions (i.e., the diaphragm, one- and three-month inject-ables, IUDs and oral contraceptives) as compared to states without mandates (47-61%) (Sonfield et al., 2004).

In states where contraceptives coverage was enforced by the law, insured women were found 5% more likely than their peers in states without mandatory contraceptive coverage to use birth control effectively (Atkins and Bradford, 2014). Unsurprisingly, no correlation appeared between the enforcement of state mandates on contraceptive coverage and the choice of birth control method of uninsured women (Atkins and Bradford, 2014). These observations are consistent with Culwell and Feinglass's multiple regression analysis' results (2007), which found that 54% of insured women claimed using prescription contraceptives, against a significantly lower proportion of uninsured women (45%). The latter group was also found 30% less likely to report use of prescription contraceptive methods as compared to their counterparts, regardless of age, ethnicity, and income range (Culwell and Feinglass, 2007).

²⁸ E.g., coverage for diaphragm method was provided by 76% of PPOs and 71% of POS plans.

This may suggest that contraception choices are not affected by demographics differences between insured and uninsured women, albeit, as it will be reviewed in the next sections, demographics do affect the likelihood the enrolling to health insurance plans — and that of getting access to effective contraception thereof. Since a wider range of FDA²⁹-approved contraceptive methods has been included in health insurance plans under the ACA, the reviewed data may be lead to deduce that the price of contraception has a subordinate role in women’s decisional process about their fertility planning, as compared to the cost of purchasing health coverage.

1.1. The financial costs of health insurances

As previously mentioned, the rate of uninsured Americans has varied over time and decreased in recent years after the ACA’s enactment in 2010. Data analysed by the US Department of Health and Human Services (2016) suggests this trend to be partly due to the creation of Marketplace under the ACA. One of its main goals was indeed to enhance issuer competition, facilitating

Figure 1: Recent trends in health insurance costs are at historical lows

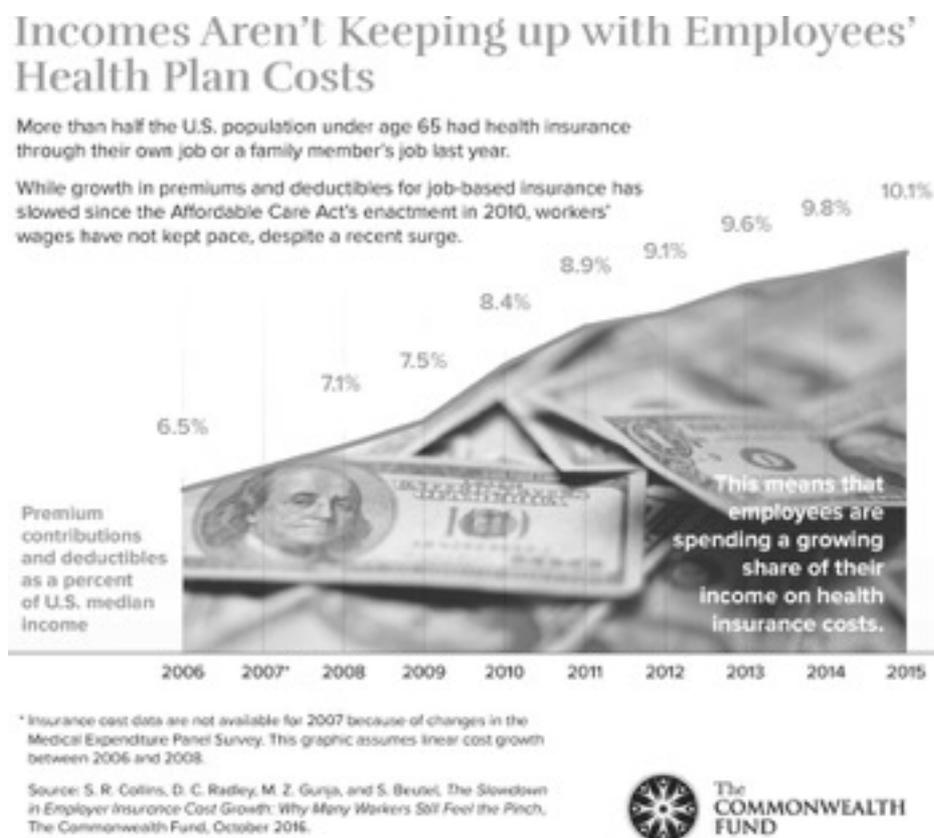


Source: PwC Health Research Institute analysis based on CMS National Health Expenditure Private Health data*

²⁹ The FDA (Food and Drug Administration) is a federal agency headed by the US executive Department of Health and Human Services. Its leading Commissioner of Food and Drugs, is nominated by the President and supported by the Senate, and it reports to the Secretary of Health and Human Services. The agency is in charged of regulating, supervising and enforcing public health policies addressed to issues such as food safety, prescription and over-the counter medications, vaccines, biopharmaceuticals, tobacco products, dietary supplements, medical devices, etc.

“consumers’ comparison shopping” (ASPE Office of Health Policy, 2016, p. 4). Empirical evidence collected in the past decade and analysed by different agencies indicated that the growth rate of premiums and deductibles has slowed down after the Obamacare reform to the extent that insurance costs broke the historical lows (ASPE Office of Health Policy; Obama; PwC, 2016; CMS Private Health Insurance component of National Health Expenditures, 1961-2014, 2015).

Other data sets suggest this pattern may as well be a fictitious improvements, at least in part, likely sustained by the recovering from the financial crisis of 2007-08. For instance, the rate of employer-sponsored



enrolees³⁰ did remain relatively steady since the late 80's up to 2010, a report by the Employee Benefit Research Institute assessed, while premiums and deductible for employer-based insurance plans did slow down after the health care reform enactment (EBRI, 2007; ASPE Office of Health Policy, 2016). On the other hand, the proportion of the median income eroded by them has kept rising due to stagnant growth of wages as compared to the growth rate of

³⁰ The study by the EBRI accounted for workers offered health insurance and those taking coverage when offered (NCSL, 2160).

health coverage (Collins et al., 2016). Workers' wages experienced 2.5% increase from 2015 to 2016 whereas inflation rose by 1.1% and premiums for family coverage exhibited a 20% increase since 2011 — 58% since 2006 (KFF/HRET, 2016; Bureau of Labor Statistics, Department of Labor, 2015).

Trends observed in the past three years seem to back up the hypothesis that actual improvements are being achieved under the ACA. For example, the roughly 85% of HealthCare.gov³¹ consumers with premium tax credits experienced a 4% average monthly net premium increase from 2015 to 2016, according to an HHS report (2016). Accounting for purchases, the increase in the average premium was 8% for the same period, below the 10-15% forecasted based on initial issuer rate filings. Namely, initial issuer rate filings were found to be an inefficient predictor of premiums trends for the Marketplace consumers, due to the fact that such an index does not consider rate reviews, consumers' actual purchase choices, nor tax credits³² — which account for 85% of Marketplace purchased plans in 2016 (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016).

Continuing, from 2015 the average annual premiums for employer-sponsored health insurance rose by 3% for family coverage (hitting US\$ 18,142 in 2016) and by a non significant proportion for single coverage (US\$ 6,435 in 2016) — albeit premiums vary considerably around the averages (HHS, NCSL, KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). The average premium for family coverage is over \$1,000 lower for employees working in small firms (\$17,546) than for those covered by large³³ employers (\$18,395) — only an overall 12% of workers enrolled in plans that do not require a contribution above 25% of the premium.

³¹ healthcare.gov is the online platform for privates to compare and confront the different options available in the Marketplace.

³² On average, tax credit amounts cut off consumers' monthly premium by 73% (HHS, NCSL, 2016). The computation of tax credit amount is based on the premium of the second-lowest cost silver plan (the benchmark plan) which an enrollee is eligible for. The amount is subject to adjustments aimed at ensuring that if the benchmark plan's premium varies in an upward fashion uniformly in an area, then the increase in the health coverage cost is absorbed by higher premium tax credit (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016, p.1)

³³ Employing 200 workers or more.

As a downside, employees of small businesses contribute fifteen percent points more (in terms of proportion of family coverage premium) than their counterparts working in large firms. This gap shrinks by ten percent points when accounting for income ranges within firms, with the higher cost-sharing hanging on lower-wage employees³⁴. In other words, the higher the proportion of low-income workers, the higher the cost-sharing in terms of premium percentages, both for single and family coverage (Bureau of Labor Statistics, 2015).

Juxtaposed to premiums, covered workers face additional expenses, in terms of “out-of-pocket” cost-sharing. Namely, about two-thirds of employees face either copayment (fixed dollar amount) or coinsurance (proportion of the covered amount) for both primary and specialty care, equivalent to an average copayment of \$24 and \$38 respectively (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). In addition, the majority of workers are charged for hospitalisation with an average of \$282 copayment per hospital admission, \$281 per diem tenure, and \$898 separate annual hospital deductible.

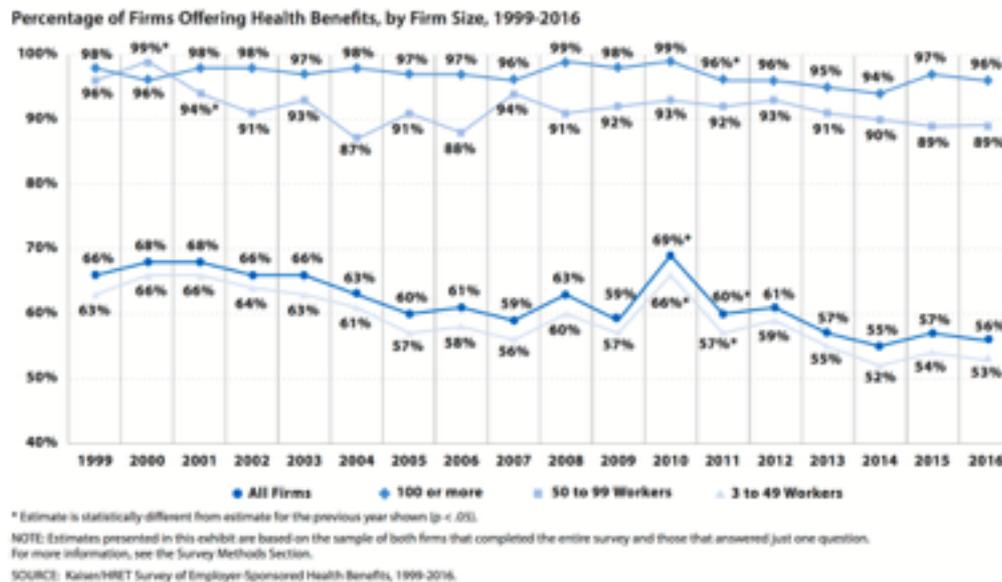
Although virtually all coverage plans impose an “out-of-pocket maximum”, this varies significantly. For example, only 14% of insured employees’ plans have an annual out-of-the-pocket maximum for single coverage up to \$ 2,000. Additionally, virtually all employer-based larger (more comprehensive) insurance plans cover prescription drugs. Again, depending on the drugs categorisation, the cost sharing proportions may vary significantly. Large firms whose larger plan is an high-deductible health plan with a savings option (HDHP/SO) are more likely to provide the great majority of their employees no cost sharing passed the deductible. Of course, deductible is higher for enrollees of such plans as compared with those covered by HMOs, PPOs, or POS plans, although HDHP/SOs’ premiums are noticeably lower than all other plan types.

Low premium prices of HDHP/SOs has likely played a major role in fostering the rate of enrolment to such plans, since the ACA’s Individual

³⁴ The Bureau of Labor Statistics (2015) estimated that 35% of workers earn less than US\$ 23,000 yearly, classifying as low-income workers.

Mandate has established progressing fines on eligible enrollees who decide to remain uninsured. As a matter of fact, in the last two years HDHP/SOs enrolment rate has increased by 8 percentage points among covered workers, which resulted in the shrinking of the growth rate of single and family premiums down to 0.5%. On the other side, enrollees to exchange or private market plans for 2017 suffered a 25% increase of their premium price before subsidies — which account for a ten point decrease (HHS, NCSL, KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). The cohort of employees covered by self-funded plans³⁵ has also sustainedly enlarged, going from 49% in 2000 to 60% in 2011 and 61% in 2016. Trivially, this type of plans are considerably more likely to be offered by large firms as compared to small firms (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016).

As for the aggregate level, 56% of firms offer health benefits to at least some of their staff, while 89% of active workforce is employed by companies that do offer some coverage (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). However, alongside the proportion of low-wage range



³⁵ Self-Funded Plan: An insurance arrangement in which the employer assumes direct financial responsibility for the costs of enrollees’ medical claims. Employers sponsoring self-funded plans typically contract with a third-party administrator or insurer to provide administrative services for the self-funded plan. In some cases, the employer may buy stop loss coverage from an insurer to protect the employer against very large claims.
 Fully Insured Plan: An insurance arrangement in which the employer contracts with a health plan that assumes financial responsibility for the costs of enrollees’ medical claims.

employees, firm size (in term of number of workers) also appeared to be a significant factor determining the likelihood of employer-sponsored health insurance offers — as well as the type of coverage (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). As a matter of fact, less than 50% of businesses with less the ten employees offers some sort of healthcare benefits. This proportion increases proportionally to firm size, reaching a virtual 100% in companies with 1,000 employees.

Since 2011 firms with less than 50 employees cut their health care coverage offers, apparently following a trend precedent to the ACA's enactment and coverage expansion (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016). The endurance of such pattern could have been fostered by a combination some of ACA dispositions, although they were only fully enacted in 2016. On one side, the “employer responsibility requirement” addresses businesses with more that 50 full-time employees (FTEs³⁶), requiring them to offer (to FTEs) coverage plans that meet the minimum standards for both value and affordability — failing to comply with these directions would result in a penalty for the employer to pay. On the other side, the Individual Mandate along with the creation of a MarketPlace to decrease the cost of health insurances could have led small firms, who not disposing of the contractual power of large companies in terms of negotiation with insurers, to drop health coverage to their employees, since they could provide private plans at more convenient premiums.

Almost all firms have offered healthcare coverage in compliance with the ACA's standards to at least 95% of their FTEs. Interestingly, survey-based data found that the adjustments these firms are planning on implementing in the near future seem to also align with the ACA's thrive to expand and improve health insurance coverage. Employers who reportedly wanted to implement changes to extend coverage to workers previously not eligible or widen the range of health benefits offered significantly outnumbered those whom intended to make changes in the opposite direction (e.g., increasing the waiting time for new employees to get access to health benefits). Moreover,

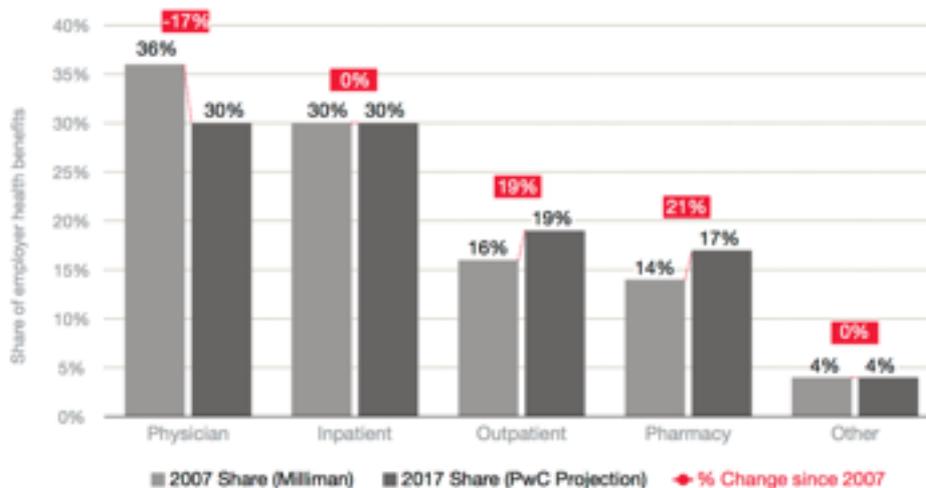
³⁶ As from the ACA's eligibility standards, an FTE works an average of 30 hours per week.

9% of surveyed employers claimed having made (or already implemented) plans of reclassifying some of their FTEs’ status, 2% to either drop out of (2% of the total surveyed) or join in (7%) the employer responsibility requirement.

The great majority of firms however did not refer having planned any change in response of the costs arising from the employer responsibility requirement at all. This could be mainly explained by two factors: large firms’ negotiating power and decreasing growth rates of health insurances premiums — adding up to downward expectations on prescription drugs prices under the ACA. To get a practical idea of the costs for businesses to bury, annual contribution to covered workers’ premiums in HDHP/HRA plans amounts to \$4,717 for single coverage, and \$12,628 for family coverage.

Employers’ financial burden due to workers’ medical care is only partly determined by insurance premiums. Hospitalisation, physician visits and prescription drugs also contribute — although in different proportion — to the cost of health benefits. The greater weight is to be assigned to hospitalisation, which — alone — constitutes almost 50% of all medical expenses. Following, physician services and prescription drugs contribute for 30% and 17.5% respectively.

Figure 3: Roughly half of employer health costs stem from hospital inpatient and outpatient services; the prescription drug share is small but increasing



Source: Milliman Medical Index for 2007 and PwC Health Research Institute projections of 2017 medical spending based on the 2016 Milliman Medical Index. <http://us.milliman.com/insight/7pfd-2413>

Quite oddly, most of media attention has been placed on the latter source of medical expenses, even though prescription drug costs are the one with the

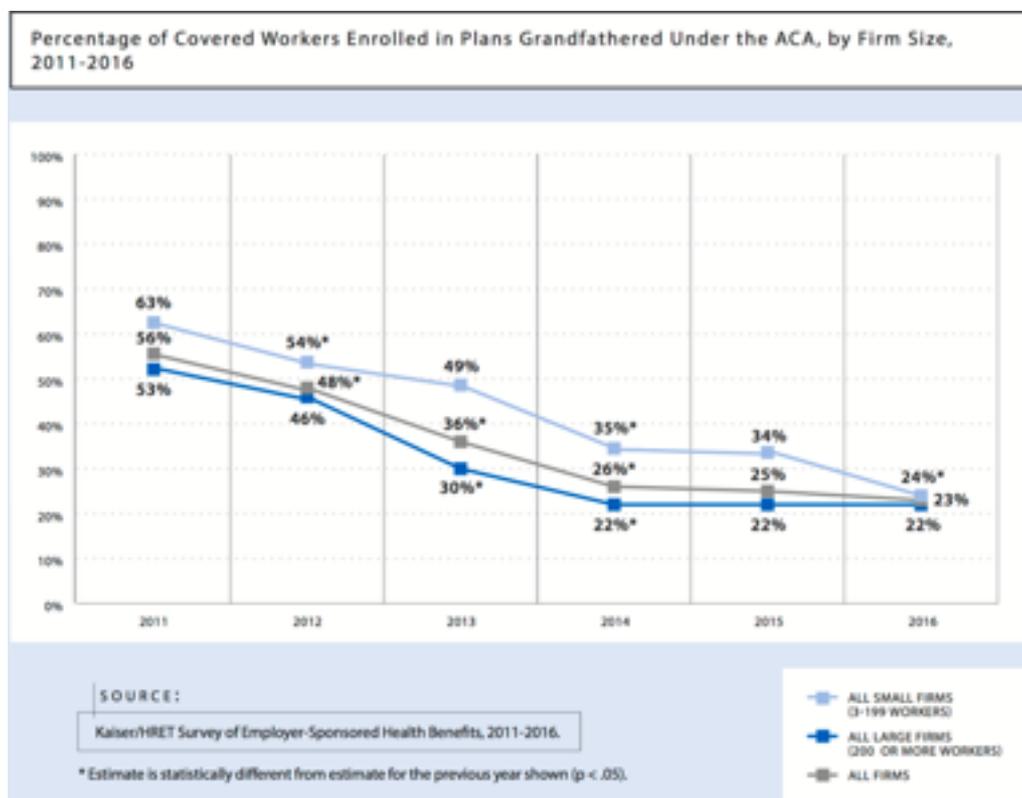
least incidence among others. For example, specialty drugs cost had in fact affected the medical cost trend³⁷, yet its inflationary effects are estimated to be levelling out in 2017 (PwC Health Research Institute, 2016). This fact, added up to other observations reviewed in this study, may indeed hint an ideological origin of the various disputes around the ACA's reform. Namely, it is worth to point out that contraceptives are never directly mentioned in none of the ACA's sections, although they do fall under the category of prescription drugs — whose costs are covered by virtually all health insurance plans.

Continuing, nearly all employer-sponsored insurance plans include the option of coverage for spouses. However, the percentage of family plans offers drops to 32% when it comes to same-sex unmarried partners. Even in this case, firm size plays a role in determining the likelihood of offering health benefits to employees in same-sex relationships and their partners: 49% of large firms reportedly provide such an option, against 32% of small firms. Again, this evidence may again unveil the presence of ideological motivations underlying financial decision-making processes of some firms.

On the other hand though, the Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2016 assessed that only 27% of employers offering family coverage to workers extend it to opposite-sex partners (with similar, but smaller probabilities for large and small firms as for the case of same-sex relationships). This last piece of evidence could point to the evaluation of a supposedly higher likelihood of opposite-sex couples to have a larger family as compared to same-sex couples. This interpretation may become appealing when considering the ACA's disposition for which children under 25 years of age fall under their parents' health insurance plan, and hence ultimately add up to the employers' financial burden for medical care of eligible employees.

³⁷ The the forecasted “*increase in the cost to treat patients from one year to the next*” in percentage points (PwC Health Research Institute medical cost trends 2007 2017; Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2016).

Aside from small firms, the so-called “grandfathered plans³⁸” are also exempted from (some of) the Obamacare provisions — in particular, consumer protection ones and the contraception mandate, that would enable the inclusion of FDA-approved contraceptive methods in the list of prescription drugs without cost sharing. These type of employer-sponsored insurance plans had been purchased by the firm before the ACA’s enactment in March 2010 and have been maintained consecutively ever since. Upon these conditions, new employees can also have access to grandfathered health plans. To present some estimates, 23% of workers under employer-sponsor coverage were in grandfathered plans in 2016 — more frequently in the southern areas³⁹ (KFF/HRET Survey of Employer-Sponsored Health Benefits, 2016).



Another interesting trend is the rapid spreading of consumer-friendly retail clinics, which are estimated to account for 3,000 units by 2017 (PwC, 2016). Although retail clinics constitute a cheaper substitute to physicians visits or

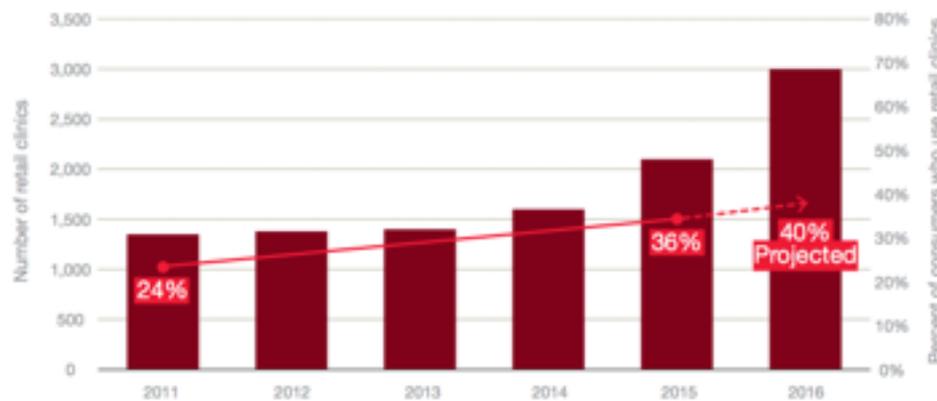
³⁸ Also, grandfathered plans cannot implement significant changes to the original contractual terms. This means that grandfathered plans are not allowed to enable cost-sharing increases, nor cut on benefits or employer’s contributions (Sobel et al., 2016).

³⁹ Workers in the Midwest are the less likely to be enrolled in grandfathered plans (Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2016).

emergency rooms, the increased accessibility and affordability of medical attention for low-acuity conditions may be a two-fold asset. Namely, easier access is estimated to cause 21% annual increase in the price of such services (PwC; Ashwood et al., 2016).

On the other hand, no evidence was found in support of the hypothesis that utilisation (i.e., volume and intensity of use) may play a major deflationary (or inflationary) role overall (PwC, 2016). A possible explanation to this rests on

Figure 5: Use of retail clinics is increasing along with the number of places for treatment



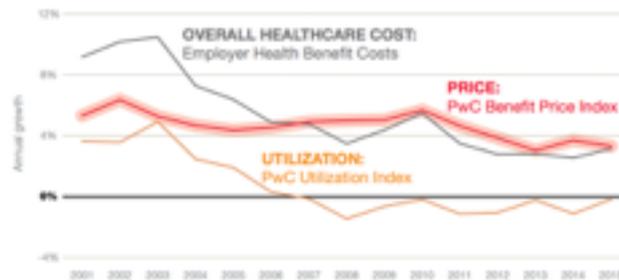
Source: PwC Health Research Institute Consumer Survey and Convenient Care Association data¹⁷

the rigidity of the demand of some medical services, even under the ACA’s coverage extension. Although a wider cohort gained (at least virtual) access to a widening range of healthcare providers and services, enrollees are unlikely to

increase the utilisation of most services merely based on their convenience. In fact — leaving aside population dynamics — hospitalisation is only granted upon a

Figure 2: Price, not utilization, is the historical force behind medical cost trend

Components of growth in healthcare costs 2001-2015



Source: PwC Health Research Institute analysis of Bureau of Labor Statistics data

professional’s diagnosis prescribing so, as well as prescription drugs or treatments for chronic or serious illnesses. This holds true for employed and unemployed workers — the average individual can only fall that sick and get that much treatment. Indeed, utilisation growth rate has varied below zero

percentage points even after the ACA's enactment (PwC, 2016; Bureau of Labor Statistics, 2012).

1.2. The costs of fertility planning

The financial burden of basic healthcare, such as birth control, often appears as a substantial barrier to access for many women worldwide. Even in developed countries like the United States, where various contraceptives are available in the market to virtually all men and women, accessibility to and affordability of effective birth control can in fact be jeopardised by its costs. For an average American woman, fertility related expenses vary, from \$150 to \$600 a year, depending on the type of contraception, according to some sources (Center for American Progress, 2012). Estimates by the Centre for American Progress are even higher and easily double up for uninsured patients.

By contrast, non-invasive male contraception⁴⁰ is characterised by significantly lower expenses and lesser or none side-effects, as well as high accessibility and ease of use as compare to female contraceptives⁴¹. Namely, the American Pregnancy Association and manufacturers assert that male condoms are not only effective at 85% level but also the only contraceptive reducing the chance of contagion with sexually transmitted diseases (STDs). In addition, the combined use of spermicides and condoms is estimated to lower the risk of unintended pregnancies from 15% to 5%. Condoms can be

⁴⁰ Male sterilisation (vasectomy) is considered an *invasive* contraceptive methods, analogously to female tubes ligation or other surgical sterilisation practices. Condoms fall in the category of non-invasive, mechanic contraceptives for external use. Their sole side-effects are imputable to intolerances or allergies to the material (mostly latex) and can manifest on either or both partners. Nevertheless, hypoallergenic condoms are available in the market at no significantly higher price.

⁴¹ Female condoms are similar to male ones, induce no side-effects (besides possible allergies), but significantly less popular. Various surveys on males and females that have tested this type of contraceptive have reported felling uncomfortable or even awkward in using, due to its physical characteristics and (un)ease of use.

purchased without prescription via various distribution channels, from pharmacies to online bids, at prices ranging from 20 cents to \$2.50 each — although some organisations and institutions (e.g., school clinics) would even distribute them for free. Based on these data, couples that use condoms twice a week incur in a yearly expense of \$150 (Palmer, 2012).

The financial gap between genders persists even in case of permanent contraception (surgical sterilisation): for both sexes the effectiveness rate is at 99% level, yet costs range between \$350 and \$1,000 for males' vasectomies, \$1,500 and \$6,000 for female sterilisation (Palmer, 2012). The Centre for American Progress reports out-of-pocket healthcare costs of women in their reproductive age to be 68% higher than that of men, in part due to contraception expenses. In this scenario, it was estimated that the most commonly used female contraception — i.e., oral hormonal pills — can contribute for up to 29% of out-of-pocket spending on health care for female enrollees of private insurance plans (Center for American Progress, 2012). In addition, due to the severity of potential side-effects, (most) female hormonal birth control is only sold upon medical prescription, released after a comprehensive health check-up and gynaecological visit (that could cost from \$35 to \$250 out-of-pocket).

The complexity of female fertility planning can be fully unravelled out of its financial or economic framing only once its physiological mechanisms have been understood. For example, the issue around preferred prescription drugs may be of trivial resolution for some types of drugs, but extremely sensible for others like hormonal contraception. Namely, at the state-of-the-arts, the jeopardised understanding of intricate hormonal interactions adds up to the difference between synthetic and natural hormones. This results in a fine balance when it comes to finding the right composition of hormonal birth control to prescribe to a woman, since one brand could have widely different (side) effects on individuals with similar health status for no apparent reason.

More into detail, fertility can be controlled (either inhibited, with contraception, or encouraged) by altering the levels of the so-called “sex hormones” — in particular, follicle stimulating hormone (FSH), oestrogen, and luteinising hormone (LH) — responsible for regulating the phases of the

menstrual cycle. Hormone FSH is produced by the pituitary gland, which is sited at the base of the brain, part of the HPA axis, which, among other functions, regulates stress responses. The primary scope of FSH is to induce egg maturation. In the first ten days of the follicular phase⁴², FSH levels drop, causing oestrogen levels to rise due to positive-feedback. This leads to the thickening of the uterus lining — a necessary process for a fecundated egg implantation. Hormone oestrogen⁴³ is instead produced in the ovaries. It interacts with both FSH (via positive- and negative-feedback) and LH (mainly via positive feedback, although low concentrations of oestrogen inhibit LH production). When oestrogen levels spike around the twelfth day of the cycle, FSH is inhibited, so that no further eggs can mature besides the one that is now ready to be released from the ovaries to travel through the fallopian tube and reach the uterus. Such process is known as ovulation and it begins approximately halfway through the cycle, initiated by positive-feedback between oestrogen and LH — which also leads to the creation of the *corpus luteum*, a temporary endocrine structure formed in the second half of the menstrual cycle (called lutea phase).

Hormonal birth control relies on the effects of negative-feedback between oestrogen and FSH, which prevent eggs maturation. Altering the natural hormonal balance may lead to serious implications, generally hardly observable by clinic tests because of the slow-acting, complex characteristics of hormonal interactions. Namely, high levels oestrogen linked to the use hormonal birth control were found correlated with variably concerning side effects such as headaches, high blood pressure and associated increased risks of major complications such as deep venous thrombosis and pulmonary embolism (Blanco-Molina and Monreal, 2010) — notwithstanding the fact

⁴² i.e., first half of the menstrual cycle: it begins with the menstruation, and ends with ovulation, around the fourteenth day of the cycle.

⁴³ The term is dated back to 1927. Its etymology refers to verve and inspiration, as well as to the erroneous belief that such hormone shall be accountable for women's "characteristic" mood swings. However, in their senility, men's levels of oestrogen are generally more than double than that of their female peers.

that oestrogen also stimulates the growth of osseous and muscular tissues as well as that of female secondary traits⁴⁴.

Furthermore, research found conflicting evidence concerning the incidence of hormonal birth control use on the risk of developing some type of cancer. For instance, according to the International Agency for Research on Cancer (IARC, 2007), combined oral contraceptives (COCs, containing oestrogen-progestogen combinations) seem to increase users' probability of developing breast, or cervix, or liver cancer. On the other hand, research also observed a correlation between COCs use and persistent decreases in the risks of ovarian (by a maximum of 40%), endometrial (by a maximum of 50%), and colorectal cancer in later stages of life (Speroff and Darney, 2005; IARC, 2007; Bast et al., 2007; Huber et al., 2008).

Given the incomplete, contrasting pieces of evidence to assess the effects of COCs on the endocrine system, manufacturers introduced an alternative formulation of hormonal birth control, containing progestin or progestogen only⁴⁵. Both are steroid hormones binding to — and activating — receptors of the sex-hormone progesterone, a major contributor to fertility and brain functionality (Baulieu and Schumacher, 2000). Namely, positive-feedback between progesterone and the *corpus luteum* stimulates the thickening of cervical mucus (which can obstruct the passing of seminal fluids) as well as the maintenance of the endometrium for fecundation⁴⁶. If fecundation does

⁴⁴ Namely, it is not uncommon for females on hormonal birth control to notice a growth of their breasts and/or hips, as well as to gain weight overall — as a matter of fact, such events are included by manufacturers in the list of the most common side-effects of hormonal birth control.

⁴⁵ However, high levels of oestrogen and progestin — as in first-generation combined oral contraceptives (COCs) and second-generation progestin-only contraceptives — appeared to increase the concentration of enzymes responsible serotonin reduction, which is linked to increased risk of depression or the worsening of a pre-existent condition (University of Copenhagen, 2014; The Huffington Post, 2016; MGH Center For Women's Mental Health, 2016).

⁴⁶ Fecundation can only occur between the second and third week of the menstrual cycle, when the egg produced from ovulation leaves the ovaries to travel through the fallopian tube and, if fertilised, get implanted in the endometrium.

take place, the *corpus luteum* is preserved and progesterone⁴⁷ levels remain stable, preventing a new menstrual cycle to begin and enabling the fecundated egg to implant in the uterus lining so that the pregnancy shall evolve. On the contrary, if fecundation does not take place, the *corpus luteum* collapses, and negative-feedback between progesterone and FSH cause progesterone levels to drop and FSH to increase, leading to a new menstrual cycle.

With that said, since its legalisation in the early 1960s, the “pill” (female hormonal contraceptive) has supplanted any other form of contraception as preferred birth control method by American women. The pill relies on the above mentioned effects of hormones like oestrogen and progestin (or progestogen only, in the “lighter⁴⁸” version of oral contraception, better known as “mini-pill”) to prevent pregnancy. In order to guarantee its 95% effectiveness, the pill intake must occur every 24 hours, during twenty-one days-on, seven days-off cycles — a break of at least three months is highly recommended every one or two years. According to Planned Parenthood, birth control pills cost between \$15 to \$50 a month (yearly, from \$160 to \$600), which can add up to doctor visits for prescription release (and check-ups).

Hormonal patches and vaginal rings (NuvaRing) are similar alternatives to the pill are, which gradually release hormones, absorbed by the skin, that inhibit ovulation with the same cost and efficiency as the pill. Patches (generally two by two inches) must be replaced every seven days and set each time on a different spot, apart from glands, in order to limit the risk of skin inflammation or cancer, and protected from abrasive contacts like the rubbing of clothing or underwear, in order to guarantee contraceptive effectiveness. NuvaRing can instead remain in place for three weeks straight and does not require particular attention. In both cases one week off per month is required to allow menstruation.

⁴⁷ The same etymology of progesterone recalls such its role with respect to the commencement of a pregnancy. Progesterone means in fact “pro gestation”, i.e., that favours childbearing.

⁴⁸ As previously mentioned, hormones are slow acting and hard to monitor by clinical test. Hence, a lower concentration of hormones may result beneficial for certain individuals but detrimental to others, depending on their metabolic functioning with respect to the particular hormone(s) and the specific dosage contained in different pills.

All hormonal contraception is subject to and can be affected by interactions with other drugs (e.g., antibiotics) to the extent that manufacturers recommend to consider contraceptive efficacy as compromised for the following month after the drug intake. It is also important to recall that all hormonal birth control methods prevent fecundation by inhibiting follicular development in each menstrual cycle⁴⁹, meaning that no egg shall be produced nor released to be fecundated. In practice, hormonal contraceptives may actually reduce ovulation occurrence only by 50%, whereas their 95% efficacy can still be reached thanks to side-effects of hormonal imbalances such as the thickening of cervical mucus — which obstructs the passage of sperm towards the tubes, where fecundation would take place — and the thinning of uterine walls — so that a fecundated egg would be left with too few tissue to steadily get implanted. In the latter case, the fecundated egg would easily be expelled by the withdrawal bleeding during the hormonal intake break. Such a process can naturally and unnoticeably occur in women that use no birth control too. However, the awareness and purposefulness of women on birth control is regarded by detractors (e.g., pro-life, or religious individuals or organisations) as an intended abortion⁵⁰. This interpretation is a direct consequence of the identification of life commencement from conception, common to several religious groups. Such a perspective has contributed to the widespread mis-categorisation of hormonal birth control as “emergency contraception”⁵¹ or even abortion practice, fostered by political or religious propaganda.

Another alternative to oral birth control is given by the intra-uterine device (IUD), a spreading contraceptive recently cleared of initial resilience by

⁴⁹ Normally, the levels of oestrogen and progesterone would drop monthly causing the uterine lining to shed, with the consequent menstrual flow functional to the expulsion of the non-fecundated egg. Women on hormonal birth control, instead, must interrupt their regular hormones intake to cause a withdrawal bleeding.

⁵⁰ “Therefore we base our words on the first principles of a human and Christian doctrine of marriage when we are obliged more to declare that the direct interruption of the generative process already begun and, above all, all direct abortion, even for therapeutic reasons, are to be absolutely excluded as lawful means of regulating the number of children. (14) Equally to be condemned, as the magisterium of the Church has affirmed on many occasions, is direct sterilisation, whether of the man or of the woman, whether permanent or temporary. (15) Similarly excluded is any action which either before, at the moment of, or after sexual intercourse, is specifically intended to prevent procreation — whether as an end or as a means (16)” (Pope Paul VI, 1968).

⁵¹ Which, instead, acts upon the fecundated egg, causing its expulsion from the uterus — and hence its death.

medical staff⁵². IUD's 99% anti-conceptual efficacy relies on the effect of either copper⁵³ or synthetic hormone levonorgestrel⁵⁴. A T-shaped plastic frame wrapped up in electrolytic copper wire (copper IUD) must be placed in the uterus by a professional healthcare provider and it can remain in place for up to twelve years. Despite its high initial cost, ranging from \$500 to \$1,000, its long-lasting efficacy is such that yearly expenses virtually amount to about \$100, making IUDs the most cost-efficient contraception currently available on the market (Center for American Progress, 2012).

A research project supported by Bayer HealthCare Pharmaceuticals ran a Markov model to compare the costs of sixteen contraceptive methods⁵⁵ and no method over a five-year time window. Even after sensitivity analyses on costs and failure rates, it appeared that no method was always an inferior choice to any available method of contraception (Trussell, 2009).

1.3. Indirect costs of unintended fertility outcomes

Together with the market conditions, unmeasured factors like “*national-level policy and court decisions, a general increase in coverage of prescription drugs and preventive services, and the growing attention given to contraceptive coverage issues by the media*” (Sonfield et al., 2004, p.77) appeared to have sustained mandate contraceptive coverage (AGI, 2004). The

⁵² Medical staff have long opposed to the use of IUDs — particularly among young women — mainly to avert any risk of infection due to the presence of a foreign body in the uterus. This tendency is currently slowly reverting, as the probability of a woman becoming sterile due to infections has not been found significant (AGI, 2016; KFF, 2016).

⁵³ Copper creates an hostile environment for sperm to survive in the uterus long enough to fecundate an egg.

⁵⁴ Levonorgestrel is also used as emergency birth control. It inhibits ovulation and obstructs the the passing of sperm by increasing mucus secretion in the cervix. It works mostly by decreasing ovulation and closing off the cervix to prevent the passage of sperm (The American Society of Health-System Pharmacists).

⁵⁵ Considering both LARCs (long-acting reversible contraceptives, i.e. implants, injectables, IUDs) and non-reversible contraception (i.e. vasectomy, surgical sterilisation).

estimated effects of all these elements combined are relatively stable among different types of contraceptives. For instance, between 1993 and 2002 coverage for oral contraception increased from 59% to 97% (AGI, 2004). Important contributions were given by environmental factors and state mandates or regulations, for estimated 65% and 30% of the total impact respectively. Changes in market share among plan types alone were instead estimated to have only played a marginal role (Sonfield, Benson Gold, Frost, Darroch, 2002).

Juxtaposed to unintended pregnancies costs, governmental data estimated prenatal care⁵⁶ expenses to amount to about \$2,000 on average, whereas uncomplicated cesarean section and vaginal birth cost about \$15,800 and \$9,600 respectively in 2008. However, in the worse — but not that rare — case scenarios, prenatal- and perinatal-care can cost up to \$250,000, in case of complications. Moreover, PhD Anne Elixhauser⁵⁷ (2016) made claim that “*the actual amount of what it costs the hospital to perform the service is about 30% of what’s charged.*”

Health insurance plans generally cover between 25% and 90% of such expenses, not accounting for out-of-pocket expenses, amounting on average to \$1,500. Medicaid and group private insurance plans cover the most of pregnancy-related expenses, whereas, according to PhD Carola Sakala (director of programs at the nonprofit Childbirth Connection), individual plans often exclude coverage for such costs (Hatfield and Smith, 2013). By contrast, a paper published in the European Journal of Contraception & Reproductive Health (Trussell, 2008) highlighted some systematic biases in the evaluation of the overall impact of pregnancy-related costs within a cost-effectiveness analysis framework.

The study (Trussell, 2008) points out that the cost of unintended pregnancies could either be completely *averted* (as for the case of *unwanted*

⁵⁶ Consisting on screenings and monthly medical appointments in the first 28 weeks of pregnancy to be scheduled more frequently, up to once a week, in the latter phase.

⁵⁷ Senior researcher scientist at the Agency for Healthcare Research and Quality,

pregnancies that led to abortions⁵⁸, which would have easily been avoided by adequate contraception use) or merely *delayed* (in the event of *mistimed* pregnancies).⁵⁹ Trussell’s paper (2008) reads: “(...) *we cannot assume that an unintended birth, if avoided today, would save the full direct medical and indirect cost of that birth; data from the 2002 National Survey of Family Growth reveal that most unintended births (60%) are simply mistimed and would occur later (...). We assume that mistimed births would occur two years later. With a discount rate of 5%, this assumption reduces the direct medical cost of an unintended birth from \$6,312 to \$2,877 (= \$6,312 x [1.0 - 0.60 / 1.05²])*”.

Albeit extremely common, all type of pregnancies are, in fact, both a life-changing and a major medical event — notwithstanding governmental sources reporting pregnancies as the sixth most common cause of death among women from 20 to 34 years of age in the US and the leading cause of death for teenage girls in developing countries⁶⁰ (Mayor, 2004). Continuing, 49% of all 6.4 million pregnancies in the United States in 2015 were unintended, confirming

⁵⁸ According to the AGI, by age 45 nearly one in three women will have undergone an abortion.

⁵⁹ According to the Guttmacher Institute (2003), terms and measurements related to *unintended* pregnancy developed from the Indianapolis Study in 1941, which set the bases for population-based surveys of fertility behaviours and intentions. A distinction between *unwanted* and *mistimed* pregnancies (relative to women’s intentions or plans) first appeared in the 1965 National Fertility Survey and was later included in the first National Survey of Family Growth (NSFG), in 1973. Unwanted pregnancies are those that occurred when no (more) children were desired, whereas mistimed pregnancies happen to have occurred earlier than desired (Santelli et al., 2003)

⁶⁰ According to the WHO (2016), in 2015 about 303,000 women died from childbirth worldwide (i.e., either giving birth or within one year from delivery, for complications arisen from their pregnancy). Research conducted by the Centers for Disease Control and Prevention (CDCP) assessed that in the last sixty years black women have incurred in a risk of maternal mortality that is three to four times higher than that of their white peers, even though the likelihood to suffer from pregnancy-related complications was found invariant between racial groups. On the other hand, administrative changes over time seem to have distorted the measurement of demographic variables. For instance the reported rise of the US maternal mortality rate in recent time seems to be counterintuitive as compare to the sustained improvements of medical science. However, the 2010 change in the administrative criteria of determination of the cause of death (IDM) may have determined the fictitious increase of maternal deaths. An alternative explanation could assume that American women have developed health conditions that increase their likelihood of dying for pregnancy-related complications.

the persistency⁶¹ of a trend that can be traced back to the 1990s with almost unchanged characteristics (Trussell, 2016). From 2002 to 2010 unintended pregnancy rates in the US decreased by 5% or more in 18 states, but rose by 5% or more in 4 states, and remained invariant in 12 states (AGI, 2011). The National Health Statistics Report (NHSR, 2012) estimated a lower rate of unintended pregnancies between 1982 and 2010, which remained overall stable at 37% according to Mosher et al. (2012). The difference in these estimates is likely explained by measurement choices: the latter study, in fact, only accounted for pregnancies resulting in live births, notwithstanding the Guttmacher Institute's estimates of a 32% median abortion ratio⁶² within an interval ranging from 13% in South Dakota to 61% in New York.⁶³

1.4. The social cost of unintended fertility outcomes

A comprehensive assessment by members of the Institute of Medicine (Brown and Eisenberg, 1995), a recent white paper review of more than 60 relevant studies (Logan et al., 2007), and other previous research (Pamuk and Mosher, 1988; Chandra, 1995; Barber et al., 1999; Taylor and Cabral, 2002; David, 2006) found consistent evidence that unintended pregnancies resulting in live births tend to be associated with “*elevated risk of adverse social,*

⁶¹ The 1995 National Survey of Family Growth estimated 49% of pregnancies were unintended in the previous year (excluding miscarriages, but including voluntary abortions), down from 57% in 1987, of which 71% of living births were mis-timed and 29% were unwanted. Unintended pregnancies were more frequent among women who were younger than 20 or older than 40, unmarried women, and black women, and women living below the federal poverty line.

⁶² i.e., the number of abortions per 100,000 unintended pregnancies (AGI,2011).

⁶³ Abortion ratio was higher than 40% in fifteen states. By contrast, the same dataset analysed by the AGI (2011) showed that the highest intended pregnancy rates were observed in Utah (71%), Idaho (61) and Alaska (58). “*Unintended pregnancy rates were generally higher in the South (Georgia, Florida, Louisiana, Mississippi, Virginia) and Southwest (Texas, New Mexico), and in densely populated states (Delaware, Maryland, New Jersey, New York).*”

economic, and health outcomes for the mother and the child” (Mosher, et al., 2012).

Mistimed pregnancies virtually enshrine a massive cost-deficiency that goes far beyond the mere discounting of medical expenses of unwanted pregnancies — and this is particularly true when gender-based discrimination comes in place. For instance, shorter time intervals between pregnancies are associated with higher risk of postpartum depression — in a significant proportion of cases, such mistimed pregnancies result from the inconsistent use of birth control or a complete lack of it. Notwithstanding a two-year delay of a pregnancy may allow teens⁶⁴ to graduate from high school and hence increase their chances of obtaining better employment conditions in the future. It is easy to see how this may consequently result in soothed, delayed, or even averted financial burden for the government in terms of financial assistance⁶⁵ to those families that could have afforded private healthcare instead of Medicaid, had they had access to birth control in the first place. For instance, about 80% of teen mothers receive some form of public subsidies (Acs & Koball, 2003), generally for longer periods as compared do women who delay⁶⁶ their pregnancies (Hoffman, 2006; Levin-Epstein & Schwartz, 2005). Such observations are consistent to findings by Monea and Thomas (2011), and Sonfield et al. (2011) on governmental short-term savings for the (unintended) pregnancy-related medical care and for the newborns’ first year of healthcare, which would be covered by Medicaid’s fundings. More precisely, estimates indicate these savings to amount to \$4 per each one dollar spent in voluntary family planning.

⁶⁴ According to the NHR, teen pregnancies terminating in births account for about 11% of all births in the U.S. In 2008 the teen birth rate in the United States was 40.2 births per 1,000 girls aged 15-19 — only 9.2 births per 1,000 were intended (i.e., 22.8% of births to teen mothers were intended).

⁶⁵ E.g., TANF (Temporary Aid for Needy Families), food stamps, housing assistance, or Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) vouchers or other facilitations for low income families or individuals.

⁶⁶ According to several studies, unintended pregnancies are usually mistimed by two years (or more). In this case, income-effect on public subsidies demand may be assumed to be weakened by the relatively short time interval between the mistimed pregnancy and the one that would have occurred, had the mother had used contraception effectively.

Reviewed studies on the matter concur that “large differences exist between groups in the percentage of births that are unintended. For example, unmarried women, black women, and women with less education or income are still much more likely to experience unintended births compared with married, white, college-educated, and high-income women” (Mosher et al., 2012). Namely, relevant literature’s results (almost) unanimously⁶⁷ assess that low-income and/or lesser educated

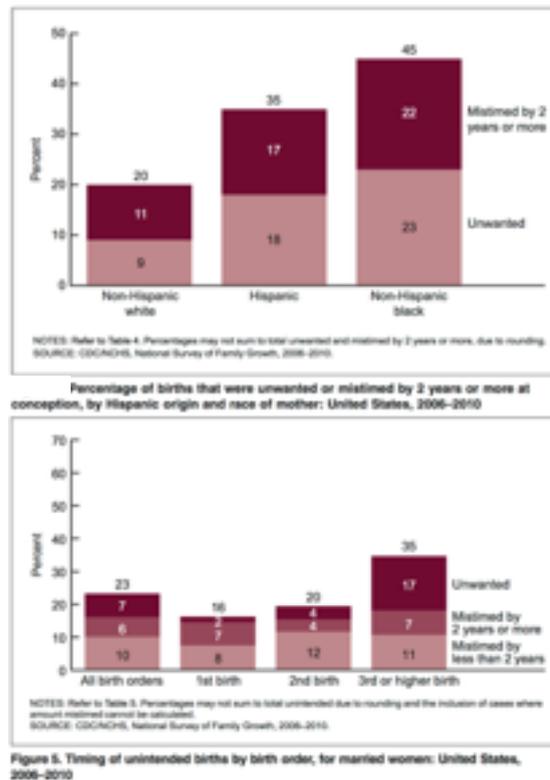
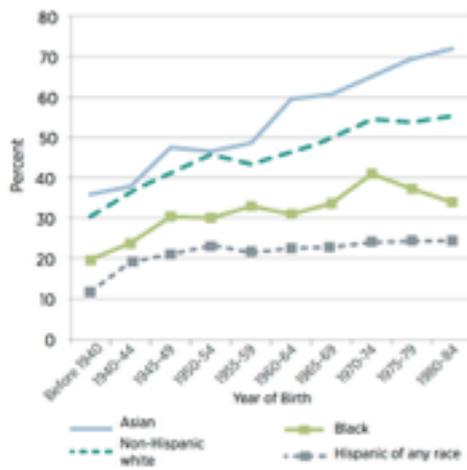


Figure 11. Share of Birth Cohort with Any Degree beyond High School in 2014, Both Sexes



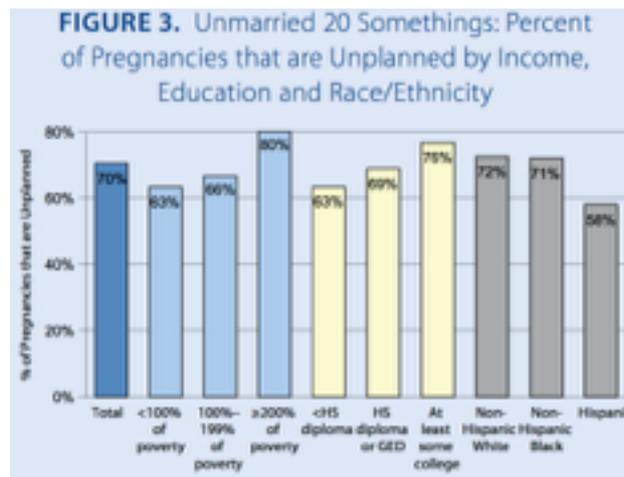
women are the most likely⁶⁸ to experience unintended pregnancies (United Nations Department of Economic and Social Affairs, 2014). Also, low-income and/or low education levels appear more often in minority groups (McKernan et al., 2015) within which, unintended fertility outcomes patterns are persistent over time.

Various studies confirmed the existence of a correlation between wealth disadvantages and “higher risk for unintended pregnancy due to risky sexual behaviours, including less vigilant contraceptive use patterns” (Finer and

⁶⁷ No counter-evidence has been found in the bibliography reviewed. It is unlikely, yet plausible that valid counterarguments may be found upon further research.

⁶⁸ Unintended pregnancies rate for low-income women was found more than five times higher than that of women in the highest income level (Finer, Zolna, 2011).

Zolna, 2011). Not surprisingly, data from the 2002 National Survey of Family Growth (NSFG, 2002) suggested that women with low education and income tend to be more prone to use c o n t r a c e p t i o n



inconsistently as compared to groups with higher income and education levels (Kost, Trussell et al., 2008). For instance, unintended births would account for 7% of births to college graduates, and 9% for women with \$400% of poverty level or higher (Kost, Trussell et al., 2008). These proportions rise up to 35% for girls who did not complete high school and to 38% for women with incomes below poverty (0-99% of FPL⁶⁹).

While studies conducted by the Centre for Household Financial Stability highlighted a strong proportional relation between higher education and higher income⁷⁰ as well as economic wealth (net worth), surveys by the National Health Statistics Report (NHSR, 2012) revealed that higher levels of education seem to be inversely related with the likelihood of women underestimating the possibility of getting pregnant due to unprotected intercourse. Namely, 26% of women with college education would reportedly make such biased evaluation as compared to 42% of those high school education or less (Kirkham et al., 2005; Nettleman, et al., 2007; Lockwood and Lemons, 2007; Mathews and MacDorman, 2011). The mis-understatement of the risk of pregnancy upon unprotected intercourse appeared to be the most common cause of inconsistent use of contraception or of a complete lack of it (Kirkham et al., 2005;

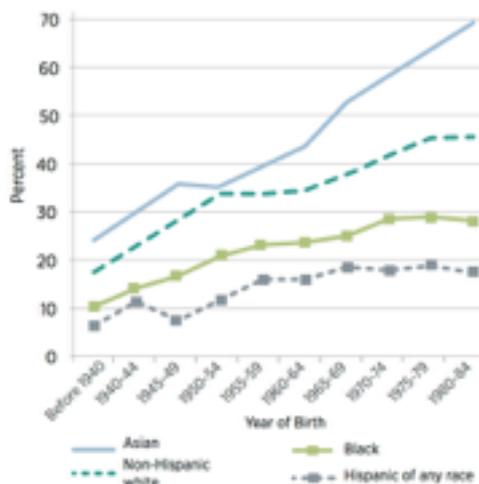
⁶⁹ healthcare.gov assessed FPL (Federal Poverty Line) in 2016 ranging from \$11,880 for individuals, \$24,300 for a family of four, to \$40,890 for a family of eight. The FPL is used, among others, to assess Medicaid and CHIP (Children's Health Insurance Program) eligibility. Marketplace insurance plans for 2016 are instead calculated upon the 2015 FPL lower amounts.

⁷⁰ Such results are consistent to the review of data collected the Federal Reserve's Survey of Consumer Finances across over 40,000 families each year from 1989 to 2013.

Nettleman et al., Lockwood and Lemons, 2007; Mathews and MacDorman, 2011).

Researchers commonly assessed the relation between education and wealth to be spurious: education correlates with other environmental and individual factors, such as family background, personal relations and skills, which bi-univocally influence one another, the likelihood of attaining higher education, and, ultimately, higher wealth expectancy. Misaligned to such assumptions, the percentage of women who reportedly underestimated the risk of unintended pregnancies was not significantly affected by the woman’s age, marital status, or income (Boshara et al., 2015). By contrast, ethnicity seems to be a discriminating factor in both education and risk of unintended pregnancy. Asian-Americans outperform at every level of schooling as compared to whites and blacks, whereas Hispanics show the lower graduation rates (Census

Figure 15. Share of Birth Cohort with At Least a Four-Year College Degree in 2014, Female Only



Bureau, Educational Attainment in the United States, 2014; Boshara et



al., 2015). Whereas various research by the NHSR found black women at higher risk of unintended pregnancy, followed by hispanics whites, black women were found to be the less likely to claim having had unprotected intercourse because they did not think they could get pregnant (25%), as opposed to 49% of hispanic women who reportedly make such biased estimate — white women’s percentage was in between these extremes, at 35%.

All considered, women’s demographics have widely been analysed in the attempt to explain the persistence of high unintended pregnancy rates, it often remained unnoticed that behind such a number of unintentionally pregnant

Figure 1. Median Income of Families Headed by Someone 40 or Older

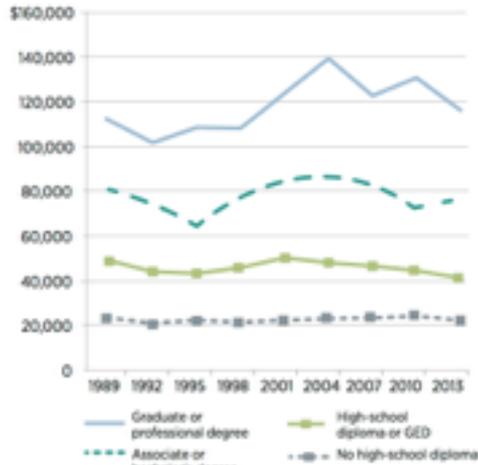


Figure 2. Median Income of Families Headed by Someone 40 or Older Relative to Median Graduate- or Professional-Degree Family Income



Figure 3. Median Net Worth of Families Headed by Someone 40 or Older

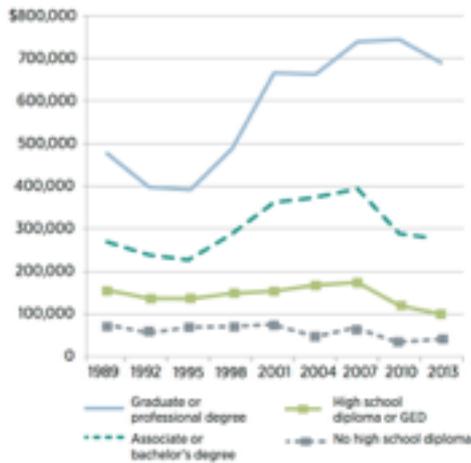


Figure 4. Median Net Worth of Families Headed by Someone 40 or Older Relative to Median Graduate- or Professional- Degree Net Worth

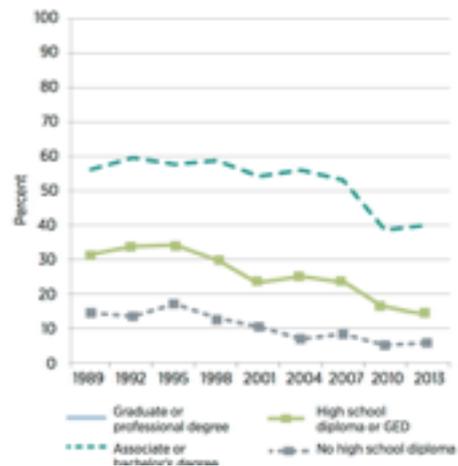


Figure 8. Median Ratio of Total Debt to Total Assets of Families Headed by Someone 40 or Older

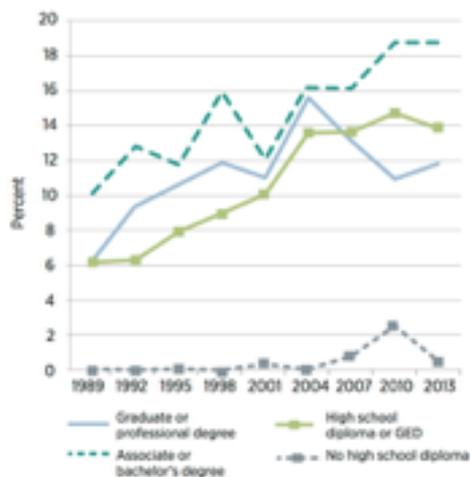
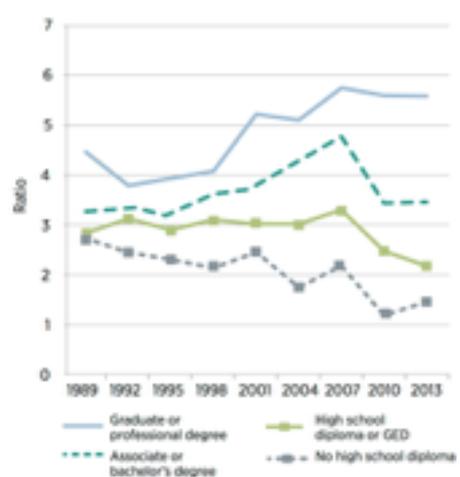


Figure 5. Median Wealth-to-Income Ratio among Families Headed by Someone 40 or Older



women there is a possibly smaller yet significant proportion of (likely unintended) fathers. Surprisingly enough, there only are a few studies

addressing unintentional fatherhood's causes and implications. The legacy of tribal misinterpretations of data concerning unplanned fertility or parenthood and birth control in modern societies and public policy may have led to a misspecification of males and females' trade-offs and sacrifice ratios.

For example, a Gallup Poll survey estimated that 56% of American women with children younger than eighteen years of age preferred being a stay-at-

home mother rather than a working mother, whereas 39% of women without children under the age of 18 said they also would preferred such role. However, the Pew Research Centre (2016) reported 71% of mothers were working outside the house in 2015, whereas a growing share of stay-at-home mothers (6% in 2012 from 1% in 2000) said they were home with their children *because* they cannot find a job, suggesting barriers to entrance may majorly affect female workforce participation rate.

Despite the apparent ongoing shrinking of the gender gap, government data presented by the Pew Research Centre assessed that the share of stay-at-home mothers increased to 29% in 2012 from the modern-era low records of 23% in 1999. On the other hand, the proportion of stay-at-home-fathers increased from 4% in 1989 to 7% in 2012. Among possible explanations to such patterns, the US Bureau Centre noticed that single fathers tend to be less educated, older and more likely to be white as compared to single mothers. This information combined with that provided by the Pew Research Centre observing income stagnancy to be indulgent only for the college-educated, may lead to the conclusion that workers with lower (or no) qualification overweight "*the cost of child care against wages and decide it makes more economic sense to stay home*" (Cohn, Livingston, Wang, 2014). Furthermore, the shrinking of the gender gap may be a fictitious phenomenon merely due to a less than proportional increase of males' wages as compared to females'

The rise in dual-income families

% of couples with children under 18



Note: Based on employment status in the prior year among male/female married couples with at least one child younger than 18 in the household. Both married and cohabiting couples included since 2010. Data regarding cohabiting couples unavailable for earlier years. Other work arrangements not shown. Same-sex couples are excluded. Source: Pew Research Center analysis of March Current Population Surveys Integrated Public Use Microdata Series (IPUMS-CPS), 1970-2015.

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wages, which in recent years have been supported from several regulations promoting gender equality and prohibiting discriminatory practices in the workplace (see Figure “the rise of dual income families”).

Notwithstanding the increasing propensity of policy makers to implement affirmative actions in favour of women’s rights, and despite the scarce available data on unintended fathering, it is generally assumed that the greater burden of parenting affects females the most (Card and Wise, 1978). This surely holds true in the short run (i.e., in the early stages of the newborn’s life), mainly due to the hardly replaceable role of mothers in childbearing (Parke and Neville, 1987), “*to the extent that the adolescent father disassociates himself from the child and/or the mother, he may minimise the negative impact of early paternity on [his] own social or educational trajectories*” (Parke and Neville, 1987:166).

As for adolescents, researchers at Johns Hopkins University estimated teen pregnancies alone⁷¹ to systematically cause billions of dollars global loss⁷² due to opportunity-costs (decreased earnings from lower educational attainments). A study by Annie E. Casey Foundation (1998) estimated that, during the first eighteen years from the birth of the first child, fathers of children born to teen mothers incur in a \$3,400 yearly loss as compared to earnings of fathers of children born to mothers who were 20 or 21 years old. Also, research by Tan and Quinlivan (2006) suggests that teen fathers are more likely to break the law (e.g., drug-related criminal offences), and they complete fewer years of schooling than their childless peers.

Research also verified the existence of a spurious relation between teenage fathering and education attainments, even though direction of causality remained unclear. For example, teen-fathers who poorly performed at school may be more likely to drop out of school and engage in risky sexual behaviours that lead to unintended pregnancy; or, *vice versa*, teen-fathers may drop out of school due to parental responsibilities. (Parke and Neville, 1987;

⁷¹ According to Finder and Zolna (2011), in 2006 teen pregnancies accounted for one-fifth of all unintended pregnancies in the U.S.

⁷² Bonnenfant et al. (2013) estimated the total cost of the 35 million teen pregnancy resulting in live birth each year in 72 countries to range from \$168 to \$503 per girl, depending on the rate of return to schooling.

Marsiglio, 1986; Lerman, 1985; Card and Wise, 1978). On the other hand, a comparison between teen and young women pregnancy rates juxtaposed to female educational attainment trends suggest that birth control may contribute but not be the only determinant of the above described demographic transition. Namely, teen pregnancy rate broke its historical lows in 2011⁷³, halving the records from 1988 of 100 births over 1,000 teenage women (Kost and Maddow-Zimet, 2016).

Extending the argument to all age ranges, it must be taken into account the role of sociological factors. For example, different cultural backgrounds present in the United States assign different roles to women (Buvinic et al., 2007), some of which expect them to take on the responsibility of raising the children at some point in their fertile life. Therefore, in the long run, an early unintended pregnancy interfering with her education is likely to cause a smaller damage to her family's wealth, providing that the father would contribute at his full potential. Moreover, females' disadvantageous position in the labour market may further wear away their rate of participation in the workforce, particularly after maternity. For instance, upon present labour market's conditions, males' earnings are expected to be up to 30% higher than their female peers' ones. At least for heterosexual couples, this consideration alone may be sufficient to assume that the male partner is likely to benefit from a better employee health insurance than his female partner, as well as to be in charged of the most significant contribution to the family's economy.

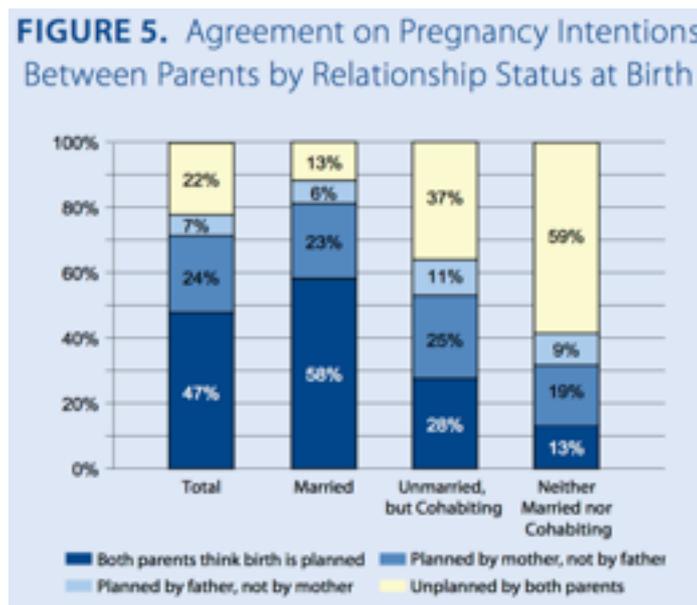
The disproportional initial endowments of males and females allocated by aggregate discrimination is amplified by further discriminatory opportunity costs. It follows the uprising of a paradoxical situation in which the male parent turns out to be the one who has the most to lose, both in terms of total expected earnings, wealth, and professional attainments. In this perspective, a mistimed pregnancy interfering with his education or his career progression may significantly affect the male's likelihood to get access to the best possible work conditions given his initial endowment of personal and environmental

⁷³ i.e., 52 pregnancies per 1,000 women aged 15-19, including estimated number of pregnancies ending in miscarriage (Kost and Maddow-Zimet, 2016).

assets. Ultimately, this would result in a more than proportional loss to his future family's wealth.

Continuing, males usually dispose of lower decisional power than females with respect to making and implementing plans on how to deal with an unintended pregnancy — the ultimate decision on childbearing is up to the mother only. A report released by the National Campaign to Prevent Teen and Unintended Pregnancy (2009) based on data provided by the National Survey of Family Growth (NSFG), the Guttmacher Institute and the Centers for Disease Control and Prevention (CDCP) assessed that the percentage of total births resulting from unintended pregnancies varies sharply depending on the gender of parent who claims the pregnancy to be unintended.

Whereas births from pregnancies unintended by the mother account to 29% of total (unintended) births, those unintended by either the mother or the father rise to 53%. This percentage further increases to 72% among cohabiting couples and to 87% among unmarried non-cohabiting couples. Moreover, a European study on 2997 men observed that, 45% of the 893



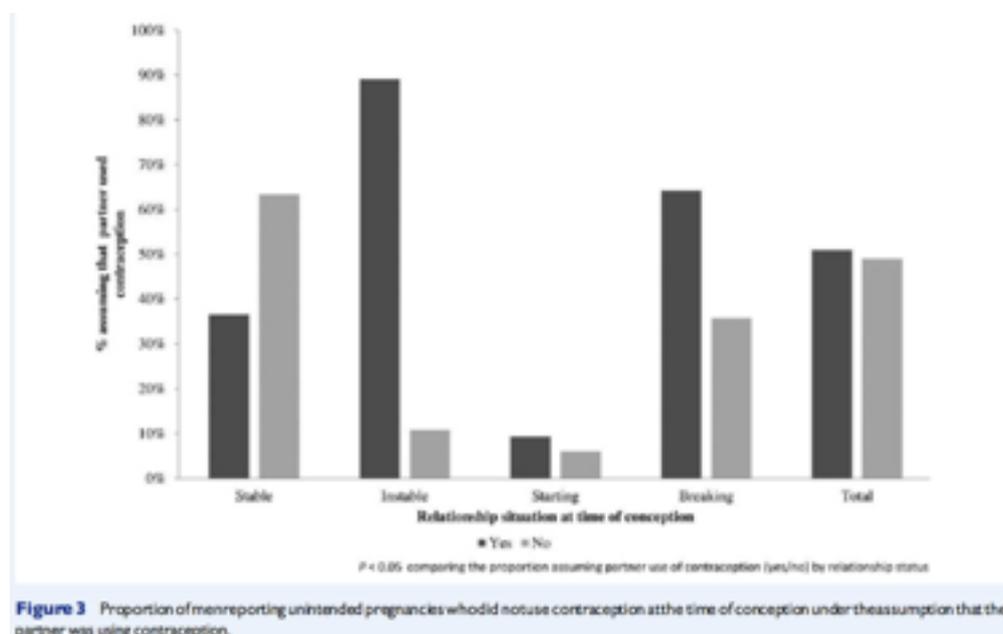
unintended pregnancies (occurred in the last 5 years) reported by 664 subjects resulted in an abortion (Kågesten et al., 2015).⁷⁴ Both studies assessed that the range 20-29 years of age is associated to the highest unintended pregnancy rate for both females and males⁷⁵. Also, it was observed that the partners' relationship status correlated with their likelihood of incurring into an

⁷⁴ Although the estimated percentage may be distorted by subjects who were not informed of their sexual partners' pregnancy, later survey data suggests that such bias would be negligible.

⁷⁵ For males, such age window is extended to their 34th year of age. A possible explanation of such discrepancy may lie in the common gap between partners' ages.

unintended pregnancy, both for males and females. Kågesten et al. (2015) offer an interesting insight on the impact of relationship status and pregnancy intentions, based on gender differences.

Predictably enough, the analysis highlighted the role of males' use of contraception in determining the likelihood of unintended fertility outcomes depending on relationship status. Namely, the probability of unintended pregnancies tends to peak for three categories of respondents: those men that had changed at least five contraceptive methods, those who had had more than ten sexual partners in their reproductive lifespan, and those in a non-cohabiting relationship at the time of the survey.



Further relevant findings concern the effect of males' educational attainment on their likelihood of having caused an unintended pregnancy in the last five years, which was found limited — on the contrary, data drawn from female population samples suggested such relation to be statistically significant (Kågesten et al., 2015). Moreover, males' professional status appeared uncorrelated with the overall likelihood of reporting an unintended pregnancy, which, by contrast, seemed to be rather associated to unemployment among those who reported a recent pregnancy (Kågesten et al., 2015). On the other hand, these factors were relevant to the estimation of the relative risk of not using contraception, which was found significantly higher for males who reported that an unintended pregnancy would have interfered

with their education and/or their job — fig. # (Kågesten et al., 2015).

As for behavioural traits, Resnick et al. (1993) did observe “*similarities in acting-out behaviour among male students who had fathered, those who had caused a pregnancy that did not end in birth, and those who were unsure if they had caused a pregnancy [which] suggest that educational and emotional problems precede*

rather than follow the act of fathering. These groups of young men were similar to each other but differed significantly from students who reported no involvement in causing a pregnancy.” The statement seems to be supported by a more recent study by Ariely and Loewenstein (2006) conducted on male college students, which confirmed that high levels of sexual arousal affect at least three components of “normal” decision making — i.e., subjective attractiveness of different activities, self-reported propensity to morally dubious practices to procure sex, and willingness to engage in risky sexual activities (such as unprotected intercourse).

These findings align with both common sense and prior studies on the effects of sexual motivation on the evaluation of the risk of contracting some sexually transmitted diseases (STDs) from engaging in hazardous sexual behaviours (Blanton & Gerrard, 1997; Ditto, et al, 2005), leading to steeper time discounting in males (Wilson & Daly, 2004). For example, consistently to prior observations by Zabin et al. (1993, 2000) on pregnancy intentions relative to relationship status and characteristics, Edin and Nelson’s qualitative analysis (2013) in the US revealed that risky sexual behaviours of low income American fathers may be better explained by their pregnancy intentions, rather

Table III Factors associated with non-use of a contraceptive method at the time of conception of an unintended pregnancy in the last 5 years (n = 176).

	Adjusted IRR ^a	95% CI	P > t
Financial situation			
No problem or tight	Ref		
Very difficult	0.5	0.3, 1.0	0.042
Pregnancy interfered with education			
No	Ref		
Yes	1.8	1.0, 3.1	0.038
Pregnancy interfered with work			
No	Ref		
Yes	1.9	1.1, 3.6	0.030
Relationship situation at the time of conception			
Stable	Ref		
Unstable	0.3	0.1, 1.1	0.082
Starting	1.2	0.5, 3.0	0.669
Breaking	1.8	1.0, 3.4	0.065
Education (highest diploma)			
High school degree or more	Ref		
No high school degree	2.9	1.6, 5.2	<0.001

^aAdjusting for age and educational attainment, and the financial, educational, work and relationship situation at the time of conception.

than their demographic traits only. Although drawn from a limited sample of the population in reproductive age, such a reasoning may in fact be more explanatory of the targeted phenomenon than any model based on wider demographic data like those reviewed so far. Out of economic theory, it could also be reasonable to presume that female judgement of “hazardous” sexual behaviours may be affected similarly to that of their male peers under analogous circumstances.

Continuing, factors generally neglected by researchers and medical staff — like chances to meet a partner, ratios of time and income invested in leisure, alcohol consumption, etc — may play a major role in influencing the risk of unintended pregnancy. For instance, Maynard and Hoffman (2008) found that the risk of unintended pregnancy among teenagers was significantly determined by their age at first sexual intercourse. The problem would then be analogous to that of revealed preferences of consumers of a public goods, where the latter are reproductive rights. Therefore, the unintended fertility outcomes would depend on the chances that both males and females — especially from demographic groups subject to higher risks of undesired pregnancies — have to get access to their preferred contraceptive method.

Contextualising these considerations within an economy characterised by marked disparities in employment conditions and — hence — healthcare coverage, the correlation between public family planning programs and welfare policies shall become apparent.

Chapter 2 ~ The Contraception Mandate: evolving arguments.

The Contraception Mandate became law in March 2010 as part of the US health care system's reform known as Obamacare, ACA or PPACA (Patient Protection and Affordable Care Act (Pub.L. 111–148), amended on the 30th of the same month by the Health Care and Education Reconciliation Act (Pub.L. 111-152). Some key features of the ACA described in previous sections will be further detailed in this chapter, with particular focus on the Contraception Mandate's provisions. Building up on medical, ethic, demographic and economic premises, the impact of the mandate with regard to the repercussions onto the labour market will be reviewed in later sections.

The choice of narrowing the focus of the analysis on the labour market stems from the statistics provided by governmental and private studies assessing that the great majority of American women fall under employer-based health coverage, either as primary or dependent enrollees, i.e., as spouses or dependent children of somebody enrolled in a plan offered by the employer. This observations gain even more significance if weighted by statistics (KFF, 2016; AGI (2010) like the proportion of women that would make use of contraception⁷⁶ at some point in their reproductive lifespan (99%, 60 million women aged from 15 to 44, 70% of which are sexually active but do not intend to get pregnant) or are currently on some method of birth control (62%).

Up to 2010, a number of states had already enacted some regulations to include prescription birth control into private and public health insurance plans (Sonfield et al, 2002). Before the ACA, coverage for family planning was far from universal: some states had even legislation against it (Sonfield et al., 2002), bypassing the EEOC's disposition (2000) stating that employers who

⁷⁶ The three most preferred contraceptive methods are hormonal oral pills, female sterilisation (tubes ligation), and male condoms, used by 26.7%, 25.1%, and 22.8% of the American female population (KFF, 2016). Unfortunately, some studies found that hormonal oral birth control and condoms are also the methods with the higher failure rate resulting in unintended pregnancies (Kagesten et al., 2014).

did include prescription drugs in their health insurance plans but excluded contraceptives coverage were in violation of the Civil Rights Act of 1994, and were committing discrimination on the basis of sex. Yet, according to the 2010 Kaiser/HRET survey of employers, prescription contraceptives were included in the employer-sponsored largest health insurance plan by more than 4 out of 5 large firms, even though there were cases in which cost-sharing could vary considerably and arbitrarily.

The ACA settled the issue by mandatorily excluding from private and public health plans the option of any cost-sharing of FDA-approved prescription birth control method or preventive service (Birth Control Guide, FDA, 2015). Thanks to this disposition, a wider proportion of women are virtually granted affordable⁷⁷ access to reproductive health care (KFF, Cox et al., 2016), either through employer-sponsored coverage (in which over 50% of American women are enrolled) or private plans purchased from the ACA Marketplace.

In 2015 the Department of Health and Human Services (HHS) issued a list of all 18 FDA-approved contraceptive methods⁷⁸ for which cost-sharing does not apply under prescription by a qualified healthcare provider. Moreover, alternative brands or tiers of a specific drug must be included by the insurance issuer with no cost-sharing or with a “waiver” when prescribed or recommended for medical reasons (Centers for Medicare and Medicaid Services, 2015; KFF, Sobel et al., 2016). Namely, hormonal birth control is

⁷⁷ For instance, the share of women incurring in out-of-pocket expenses for oral birth control was 121% higher in 2012 as compared with a 3.6 percentage points in 2014 (KFF, 2016). The inclusion of contraception in health insurance plans correlates to increased use of effective birth control and decreased out-of-pocket expenses (for women) by more than 60% from 2012 to 2014 (KFF, 2016).

⁷⁸ As of July 2015 (PHS Act section 2713) all plans must provide at least one method from each of the 18 FDA-approved birth control categories at no out-of-pocket costs: 1) sterilisation surgery; 2) surgical sterilisation implant; 3) implantable rod; 4) copper IUDs; 5) IUDs with progestin hormone; 6) shot/injection; 7) oral contraceptives, with oestrogen and progestin; 8) oral contraceptives with only progestin; 9) oral contraceptives, known as extended or continuous use that delay menstruation; 10) patch; 11) vaginal contraceptive ring; 12) diaphragm; 13) sponge; 14) cervical cap; 15) female condom; 16) spermicide; 17) emergency contraception (Plan B/morning after pill); 18) emergency contraception (i.e., oral medication named Ella). Also, the mandate rules each of the 18 FDA-approved categories to be covered by at least one drug or service, but does not imply all contraception-related services or drugs to be covered as well (ObamaCare Birth Control. Retrieved from <http://obamacarefacts.com/obamacare-birth-control/>).

often times prescribed for treating a wide range of symptoms or diseases associated with the menstrual cycle, like acne, anaemia, menstrual pain, endometriosis (KFF, 2016; AGI, Jones, 2011).

There are some restrictions on the eligibility to benefit from the ACA mandates. Namely, women must not be enrolled in grandfathered plans (as discussed in previous sections) and they must refer to “in-network” providers to get medical attention under the ACA’s favourable terms and conditions. More into detail, different Marketplace plans refer to a “network” of healthcare providers, which the enrollee can get medical attention from without cost-sharing or at the conditions determined by the ACA’s reform. All issuers in the Marketplace are required to provide a reasonably wide (in types and location) network⁷⁹ for their enrollees to choose. This disposition relates closely to the issues of accessibility and quality of healthcare, aiming at favouring timely⁸⁰ access to adequate medical attention, including mental health services. For instance, essential community providers (ECPs) and Title X clinics — mostly serving low-income patients or clients and Medicaid enrollees — must be included in the network.

The ACA’s applicability is also limited to firms with more than 50 full time employees (FTEs). Exemption of otherwise eligible firms can also be granted based on the employer’s religious beliefs. That would not just be the case of houses of worship and no-profit religiously affiliated organisation. Namely, since the Supreme Court’s ruling on *Zubik vs Burwell* (May, 2016), closely held for-profit companies could too be exempted from including birth control — if they object to it — coverage in their health insurance plans. However, even when the “opt-out accommodation” is granted to religious employers (upon their explicit notification to the relevant authority), employees (or their

⁷⁹ The means for the policy-makers to check on the provision’s enforcement remain unspecified. The matter is misty since carriers are entitled to switch from one in-network provider to others even during a plan year (KFF, 2016).

⁸⁰ Survey-based data indicated that low- and medium-low income enrollees are the most likely to get delayed access to medical services needed. This is due to practical barriers to access, such as inadequate opening hours of health care clinics, or appointment scheduling (Harvard TH Chan School of Public Health, 2016).

dependents⁸¹) would still have access to reproductive healthcare without cost-sharing — the costs would be charged either on the insurer or on governmental plans, bypassing the objector.

Further limitations of the ACA concern the non-inclusion of over-the-counter (OTC) and male contraceptives methods (condoms, spermicide, vasectomy) in coverage plans and the management of confidentiality issue for dependent enrollees. The former in particular sounds like an odd choice since male contraception is on average significantly cheaper than female birth control methods, which also embody considerably higher risks of side-effects that could result in further medical expenses, as discussed in sections ii. of Introduction and 1.3. of Chapter 1. Even progressive states like California and Oregon who have approved laws to extend the range of (female) hormonal contraceptives covered without cost-sharing, missed out on the inclusion of male contraception (AGI, Sonfield, 2015). Such an economically arguable choice may likely enshroud motivations that have little or nothing to deal with public policies' cost-effectiveness standards. Aligned with these considerations, the CDC (2015) and the Office of Population Affairs have issued their recommendations for the government prompt action in the direction of a more equal treatment of reproductive health, away from gender-based discriminations (Gavin et al., 2014).

As for confidentiality, it is reported to be a main concern⁸² for teenagers and women covered by health insurance plans as dependants. Often times, this would ultimately result in a barrier to access effective contraception, both for women and teenagers (AGI, 2015; UNFPA, 2014; Frost et al., 2012). More into detail, twenty-seven states would enable teenagers older than twelve to consent to reproductive health services, whereas another twenty states pose some limitations (the remaining states have not yet passed relevant

⁸¹ In case of family coverage plans, spouses or children under 25 years of age are enrolled the employer-sponsor health insurance.

⁸² For instance, 71% of surveyed women aged 18 to 25 rated confidentiality as an “important” component of medical decision-making (KFF, 2016). However, only a scarce 40% of respondents were aware of the fact that health care insurers would normally deliver an EOB to the primary enrollee, which is often a parent or a spouse (KFF, 2013). This proportion shrinks to 24% in case of teen respondents aged 15 to 18 (KFF, 2013).

regulations). While private providers and medical staff need to comply with the federal laws concerning “*parental notification or minor consent*” (KFF, 2016), Title X clinics are cleared from such obligations (English, 2014). Therefore, dependant children covered by plans that include in-network Title X clinics are entitled to reproductive health services without parental involvement, even if underaged. Analogously, women enrolled in such plans as dependants are granted confidentiality and no notification to the primary coverage holder — which is often a spouse.

Again, some states have anticipated the central government intervention on the matter by issuing dispositions to protect confidentiality — the applicability of such laws is yet limited to insurance plans directly regulated by the state (KFF, 2016). For example, in 2015 the State of California enforced a law to oblige issuers to comply with confidentiality of enrollees that request it for sensitive health care services or “*when disclosure could lead to danger*” (KFF, 2016, p.5), whereas Colorado would grant confidentiality for adult dependents only.

Finally, up to 2014 it appeared that 57% of the population — including both providers and enrollees — is confused about applicability and eligibility conditions of the ACA’s mandates on preventive services out-of-pocket costs (KFF, 2014). In particular, some providers seem to fail to correctly classify this type of services (KFF, 2015), which results in a growth rate of out-of-pocket and generally contraception expenses below the full potential that could be reached had the ACA’s provisions been enacted correctly.

2.3. Controversies about the ACA’s Contraception Mandate

Since its passing, the ACA and its mandates have faced fierce opposition by advocates of their unconstitutionality. Major complaints gravitate towards the financial penalty due to the Government by those who decide to remain uninsured, in violation of the ACA’s Individual Mandate. Such a clause ratifies

a private health insurance coverage as mandatory for all American residents, although the government subsidises part of the expenses depending on income level and eligibility of the enrolees. Based on the constitutional right of the government to raise taxes, in July 2012 the Supreme Court of the US voted 5 to 4 in support of the Obamacare inaction, with the majority opinion being that “*the ACA’s requirement that certain individuals pay a financial penalty for not obtaining health insurance may reasonably be characterised as a tax*”.

Further litigations stemmed from religiously affiliated organisations’ complaints, claiming that by introducing female oral birth control in the list of preventive services with mandatory coverage by the employers, the Contraceptive Mandate violated both the Establishment and the Free Exercise Clauses contained in the First Amendment: “*Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof*⁸³; *or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances*⁸⁴.”

The Obama Administration responded with a prompt attempt to settle the dispute amending the original mandate on FDA-approved female contraception coverage. Religiously affiliated non-profit organisations like “*non-profit religious hospitals and institutions of higher education that certify they have religious objections to contraceptive coverage*” were accorded the right to opt out the mandate, so that the costs of prescriptions would rather be charged on a third single-payer insurance plan (i.e., a government program). On the other hand, in most cases, insurance companies are obliged to provide separate coverage to employees of religious organisations without cost-sharing by the employer or employee — even when deductible has been met (Frost et

⁸³ The Establishment Clause, written by congressman J. Madison in 1789, prevents the national government from imposing its religion upon its citizens. Historically, this clause like others stemmed from the founding fathers’ phobia of a future resurrection of English-like dictatorships of the central government.

⁸⁴ The Free Exercise Clause is contained complements and extends the first Clause of the First Amendment, preventing the government from any interference in private and public religious affairs. In 1971, the Supreme Court’s interpretation of this clause in the milestone case *Lemon vs Kurtzman* would produce the “excessive entanglement test”, which is part of the so-called Lemon test, often used determine the constitutionality of regulations based on the Establishment Clause.

al. 2014). Attorneys were not at all satisfied by the “accommodation”, and continued their fight in court.

Lawsuits have caused a temporary discontinuity in contraceptive coverage to employees of certain institutions that laid claim of exemption, even though an amendment issued in July 2015 after the Supreme Court’s ruling on the case *Hobby Lobby vs Burwell* in 2013 ensured free contraceptive coverage through a third party to employees of religiously affiliated organisations eligible for exemption⁸⁵. The case is not yet dismantled but it has already become a jurisprudential cornerstone.

Hobby Lobby is a chain of retail arts and crafts stores, namely a for-profit corporation based in Oklahoma and owned by devout Evangelical Christians, counting 500 locations across the United States, and would therefore not be eligible for exemption under the original ACA’s mandate formulation. Nevertheless, based on alleged violations of the Religious Freedom Restoration Act, *Hobby Lobby* laid claim of exemptions that had been already granted to non-profit and religious organisation.

In December 2013, Justice Sonia Sotomayor denied *Hobby Lobby* an emergency appeal to get an exemption from contraception coverage provision to its employees but less than one year afterwards (June, 2014), the Supreme Court reverted the ruling in *Griswold vs Connecticut*⁸⁶ (1965) that declared the unconstitutionality of laws banning contraception. A majority of 5 (male) to 4 (one male and three female) justices ruled that *Hobby Lobby* were to be exempted from providing contraception coverage. The Court did still attempt to contain the legal precedent’s echoing by “specifying” its applicability to the prosecutor’s religious belief and contraceptives in question (i.e., Evangelical Christian faith and Plan B emergency contraception), and to “*closely held*

⁸⁵ i.e., religious employer health plans; grandfathered health plans (that were purchased before March 23, 2010); short-term health insurance; “*alternative plans offered by insurers that specifically exclude some forms of birth control (each exchange is supposed to offer at least one plan that does not provide coverage for controversial contraception)*” (ObamaCare Birth Control. *What Plans Don’t Have to Cover Birth Control*. Retrieved from <http://obamacarefacts.com/obamacare-birth-control/>).

⁸⁶ The Supreme Court stated that the right to abortion, conforming to relevant laws, was protected by privacy rights of married couples, and hence nor the government nor the states could dispose against personal choices in such matter (381 U.S. 479, 85 S. Ct. 1678; 14 L. Ed. 2d 510; 1965 U.S. LEXIS 2282).

corporations” whose stock is owned in a proportion of at least 50% by up to five individuals.

After the death of Justice Scalia in February 2016, the remained eight justices of the Court were unable to reach a majority verdict. This situation stalled until May 2016, when the Supreme Court’s *per curiam* remanded the litigation settlement to lower circuit courts. Namely, the parties were instructed to find an agreement in the respective Courts of Appeal and cooperate to “*arrive at an approach going forward that accommodates petitioners’ religious exercise while at the same time ensuring that women covered by petitioners’ health plans receive full and equal health coverage, including contraceptive coverage*” (578 U. S. *Zubik vs Burwell*, 2016, *per curiam*). This approach was justified by the Court in the light of petitioners’ acknowledgement that the Religious Freedom Restoration Act would not be infringed if they only were to be demanded to “*contract for a plan that does not include coverage for some or all forms of contraception*” and allow their employees to “*receive cost-free contraceptive coverage from the same insurance company*” (578 U. S. *Zubik vs Burwell*⁸⁷, 2016, *per curiam*, p.3).

Given the Supreme Court’s refusal to rule on the case, the underlying debate remained unsolved at national level and the settlement of all disputes is hence remanded to state’s discretion. One of the four justices to condemn the conduct of *Hobby Lobby* commented “*the Court, I fear, has ventured into a minefield*” (Justice Ginsburg, 2014). Other detractors of the Court’s decision also questioned the extendability of corporate personhood in claims on personal rights (such as religious freedom) as well as employers’ competences on making — or imposing — decisions on women’s health (<http://obamacarefacts.com/hobby-lobby-obamacare/>).

⁸⁷ *Zubik vs Burwell* consolidated 7 other cases on the alleged violations of the Religious Freedom Restoration Act, involving mostly but not only not-for-profit organisations, namely: David A. Zubik, et al., petitioners (14 1418); Priests for Life, et al., petitioners (14 1453); Roman Catholic Archbishop of Washington, et al., petitioners (14 1505); East Texas Baptist University, et al., petitioners (15 35); Little Sisters of the Poor Home for the Aged, Denver, Colorado, et al., petitioners (15 105); Southern Nazarene University, et al., petitioners (15 119); Geneva college, petitioner (15 191).

2.1. The demographic and ideologic background of family planning.

The Guttmacher Institute (2011) estimated that, on average, American women planning on having two children would spend close to three years pregnant, postpartum or trying to become pregnant, and the rest of her reproductive life (between two and three decades) trying to avoid pregnancy. Yet, the introduction of family planning goals in the international development agendas has encountered fierce opposition (Primrose, 2012) up to present date, despite supporting evidence would consistently remark its various benefits.

Since the legalisation in the 1960s and the faint debut in the international political agendas (Primrose, 2012), voluntary family planning contributed to bring the total fertility rate⁸⁸ (TFR) down to replacement level⁸⁹ of 2.1 live births per woman for 48% of the world's population⁹⁰. As in several other industrialised countries (see *fig. TFR*), the TFR has been decreasing below replacement level in the US ever since 1971, breaking its record lows at 1.843 in 2015 — roughly a 1% reduction from previous year (The World Bank; AGI, 2016).

It could be argued that such a downward trend may rather be imputable to a corresponding increase in abortion rates, but relevant data opens the gates to a different interpretation. After a peak in 1981 with 29.3 abortions per 1,000 pregnancies, the abortion rate has overall decreased throughout across the US,

⁸⁸ TFR expresses “*the number of births that a hypothetical group of 1,000 women would have over their lifetimes, based on the age-specific birth rates in a given year*” (Hamilton, Martin, Ventura, 2011, NVSS, vol.61, n.5, p.4).

⁸⁹ Replacement level indicates the number of live births per woman exactly sufficient to ensure each generation is able to replace itself and prevent the population from growing any further (UN Department of Economic and Social Affairs, 2013)

⁹⁰ Decreased TFR levels worldwide would not always correspond to specular reduction local level — as a matter of fact, TFR has actually increased in areas where mortality rate remained higher (UN Population Division, 2006).

Figure #. Total Fertility Rates from 1960 to 2014. As grouped by the World Bank Data section, historical TFRs for the United States (a), Australia (b), and the European Union (c) have exhibited similar values, although relying on different health care systems and policies.



Sources: (1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Reprint (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

with no evidence of a causal relation with the new state abortion restrictions⁹¹ enacted in 2011, nor with the decline in the number of abortion providers (Wind, 2014). Research suggests that lower abortion rates in the US could rather stem from improvements in effective contraceptives use occurred since the 1980s (Jones, Jerman, 2014; Jones, Kooistra, 2011). Namely, alongside abortions, adoptions trends also do not seem to support the hypothesis of such a sustained decrease in TFRs to be due to the fertile population's emaciating propensity to start a family. In fact, the Adoption and Foster Care Analysis and Reporting System report on financial year 2011 observed considerable

⁹¹ Out of the 1,256 provisions of reproductive health rights introduced by the US legislators in the first semester of 2016, 445 (46 of which passed in 17 states) aimed at limiting access to abortion services. At present date, 334 abortion restrictions have become law since 2010 - the year of the ACA's Contraceptive Mandate ratification. Such regulations build up to the 30% of all abortion obstructions legislated by the states since 1973, when the Supreme Court decision in *Roe vs Wade* (1973) formalised the interpretation of the Fourteenth Amendment previously expressed in *Griswold vs Connecticut* (1965) ruling that the right to abortion fell under the shield of the fundamental right to privacy of married couples.

upwards movements in the number of adoption, accompanied by the fall of children waiting to be adopted (Kroll et al., 2012)⁹².

Considering that the allegedly cancerous birth rate drop is not implying a reduction in the number of births just yet, the above data may suggest a widespread effort on behalf of men and women at gaining control over their fertility, according to their personal, professional, and financial situation. Specifically, due to the larger size of the American population as compared to the time period characterised by an average of 6.5 births per woman, the total number of births was slightly below 4 million in 2015 (stable at 2010 level), keeping up with and even outnumbering the records⁹³ from the past five decades (Zumbrun, 2016).

The sole significant change with respect to the width of women's reproductive windows involves the mother's age at first childbearing (regardless of her ethnicity), rather than any other underlying social adjustment (Mathews and Hamilton, 2016). As a matter of fact, from 2000 to 2014, mothers' average age for higher birth orders has increased less than proportionately as compared to the average age at first birth (Mathews and Hamilton, 2016).⁹⁴ Furthermore, data presented by the U.S. Department of Education (2011) showed that the proportion of female enrollees in degree-granting institutions increased from 43.1% in 1972 to 57% in 2010. It is reasonable to link such improvements in educational attainment among young women to a shift forward of their age at first childbearing — even though the direction of causality may as well reverse (Kost and Maddow-Zimet, 2016).

Males' average age at first childbirth has also increased in such a way that the difference between males and females' ages remained almost unchanged at

⁹² *"The number of children waiting to be adopted dropped from 133,682 in FY 2007 to 104,236 in FY 2011, those who spent time in foster care has dropped from roughly 800,000 to 646,000 since FY 2002, and those entering foster care declined from a peak of 307,000 in FY 2005 to 252,000 in 2011"* (US Department of Health and Human Services. Retrieved from: <https://library.childwelfare.gov/cwig/ws/library/docs/gateway/Record?rpp=10&upp=0&m=1&w=+NATIVE%28%27recno%3D83525%27%29&r=1>)

⁹³ The highest peak within this time horizon occurred in 2007 with 4.32 million births, breaking the record from 1957 (Wall Street Journal, June 7, 2016).

⁹⁴ i.e., 1.4 years increase for first births from 2000 to 2014; 1 year increase for second births; 0.8 years for third- and fourth-order births; 0.5 years for fifth- and higher-order births (Mathews and Hamilton, 2016).

the extrema (Mathews and Hamilton, 2016) — which correspond to education levels either below high school or above bachelor degree. This pattern may suggest that the ACA's Contraceptive Mandate could indeed catalyse the transformation of birth control from a necessary premise to “let girls learn” (e.g., delaying their first pregnancy after graduation) into the educated choice of girls and women consciously managing their fertility.

Both European and North American history points to the existence of a causal relation between contraception and development, which links declines of death rates to increases in incomes and education and decreases in birth rates (UNFPA, 2014). Demographic transitions from high to low fertility and mortality rates have consistently appeared to be a necessary — but not sufficient — condition for a country to achieve a demographic dividend, (Bloom et al., 2014; UNFPA, 2014) drawn from the growth of the working-age population outnumbering that of dependant residents (younger than 14 or older than 65 years of age).

Research has namely investigated such a spurious relation between family planning and development, in the attempt to figure out whether it is more likely to trigger self-reinforcing or vicious cycles (Bloom et al., 2014). At international level, the widespread shrinking of family size has contributed to halving the number of people living on less than US\$ 1.00 a day, while setting the basis for further social and economic development (Sinding, 2009). On the other hand, while the burst of the financial crisis in 2007, the house bubble and the consequent fall in the employment rate have reasonably challenged the realisation of a demographic dividend, anti-family planning advocates would rather blame the worsening of the global economic situation onto a widespread use of birth control, began from the post-war “moral crisis” (Pope Paul VI, 1968).

Juxtaposed to catechistic reasons, religious conservatives have regarded at the fight against birth control as means to preserve the allegedly univocal hierarchy of “natural, reproductive cycles” over economic ones (Pope Paul VI, 1968; Pope Benedict XVI, 1989; Meillassoux, 2006; Allen, 2009). In this perspective, the ACA's declared purpose of fostering the ongoing demographic transition and exploiting its dividends — also as a supportive measure to the

economy's recovery — is rather seen by some factions as a threat to the country's wealth, opening the gates to an irreversible downward spiral that would jeopardise the “natural human-life cycle⁹⁵” (Voris⁹⁶, 2016). According to this theory, loosen moral conducts will likely throw relational patterns off natural balance, and ultimately distort all social constructions that have been built upon that (Pope Paul VI, 1968).

Some have also argued that changes in the width of women's reproductive window would result in a shift forward of the average age at which the workforce enters (or exits) the labour market (ChurchMilitant.com, 2016). Allegedly, this breach in the solidity of “natural human activities and economic cycles” would ultimately cause an overload (in terms of taxes and diminished economic wealth) on the shoulders of future generations, due to the swelling size of the ageing population exhausting social security funds (Voris, 2016).

Advocates of the imminent collapse of the American pension system, forecast this to occur when the dependant population will have outnumbered the active workforce (Voris, 2016). According to guesstimates, the American economy has been kept from drowning by migration flows. By contrast, empirical-based estimates presented by the US Migration Policy Institute

⁹⁵ Economic cycles are assumed to be built upon and a consequence of natural, reproductive cycle of human beings — or, of the workforce. Furthermore, the assumption of natural cycle being designed by a higher, perfect entity and ruled according to the commandments, excludes reverse causality between “natural” and “fictitious” cycles, such as reproductive and economics ones respectively (Pope Benedict XVI, 1989).

⁹⁶ Michael Voris is the founder of Saint Michael's Media, producing and releasing videos and talks on ChurchMilitant.com, which has 187K fans on Facebook, 12K followers on Twitter, and 31K subscribers on YouTube channel. Voris graduated from University of Notre Dame and Pontifical University of Saint Thomas Aquinas *summa cum laude*. His theological arguments rest on fundamentalist, ultra-conservative Roman Catholic dictates precedent to the Second Vatican Council. According to recent news by the New York Times and The Huffington Post (February, 2017) Voris' doctrine is being retrieved by Stephen Bannon, (former executive chair of Breitbart News) in his work as current Assistant to the President and White House Chief Strategist at the White House.

(MPI, 2016) show that the share of immigrants⁹⁷ over the total US population has never broken the historical record of 14.8% dated back to 1890.

What can be accounted for as a true statement is that the absolute number of immigrants did increase exponentially since the 1970s, breaking the 40 million cap in 2011. Yet, this number would only correspond to a scarce 13% of the total US population in the same year, the MPI (2012) and the US Census Bureau assessed (Gibson and Lennon, 1999; 2010-15 American Community Surveys; 1970, 1990, 2000 Decennial Census). Additionally, the proportion of immigrants⁹⁸ in the US population has raised in such a way that, over the next fifty years, the projected demographic growth attributable to the population already in the country in 2015⁹⁹ would account for a rough 12%, according to the Pew Research Center.¹⁰⁰ This means that, by 2055 the United States will no longer have any majority racial or ethnic group.¹⁰¹

As for the theoretical fundament of the above depicted scenarios, these head back to a long-standing academic diatribe concerning the direction of causality between fertility and growth rates. The debate took over national and international stages from the early 60s — about one decade before the moral and religious debates on contraception would crash on the freshly built wall of

⁹⁷ By “immigrants” (or foreign borns) the US Migration Policy Institute refers to “*people residing in the United States who were not U.S. citizens at birth*”. Hence, “*naturalised citizens, lawful permanent residents (LPRs), certain legal nonimmigrants (e.g., persons on student or work visas), those admitted under refugee or asylee status, and persons illegally residing in the United States*”. (MPI, 2016; Gibson and Lennon, 1999).

⁹⁸ Unauthorised immigrants included. According to Passel and Cohn (2015), 11.3 million unauthorised immigrants were living in the US in 2014.

⁹⁹ In 2015, about 1.5 million of the 1965 foreign-born population still lived in the US. Since 1965, almost 59 million immigrants have entered the US; 15.1 million have died or departed, whereas 43.4 million still live in the US, the Pew Research Center estimated (2015).

¹⁰⁰ Pew Research Center defines itself as a “*nonpartisan fact tank that informs the public about the issues, attitudes and trends shaping America and the world*”. Its creation in 1990 stemmed from a research project by the Times Mirror newspaper company concerning major policy issues. Its activity consists of conducting public opinion polls, content analysis, demographic research and other data-driven social science research (retrieved from <http://www.pewresearch.org/about/>).

¹⁰¹ However, racial and ethnic connotations vary over time, depending on that social consensus, self-identification or other factors (Liebler et al., 2014; Pew Research Center, 2015b; Wang, 2015). Notwithstanding the increase in the number of mixed-race marriages (Wang, PRC, 2012), American citizenship is granted to all newborns delivered within the US territory, regardless of the parents' nationality.

human and civil rights. Alongside the moral discussion, fervent propaganda against both family planning and abortion would rely on economic ideologies for which “*development is the best contraceptive*” (Potts, 2014, pp.145-151). On the opposite front, progressivists would respond with the antithetical claim “*contraception is the best development*” (Potts, 2014, pp.145-151).

Zoology assesses that nature’s self-regulating mechanisms are such that populations of all species would adapt their growth according to environmental constraints. Applying the same reasoning to the rate of growth of human societies, it could fairly be deduced that, at a certain point, some exogenous factors — if not voluntary family planning — would intervene and stop or revert the pace of population growth rates, according to environmental and biological constraints (Malthus, 1798). Also, at the current state, population size is such that uncontrolled births would likely be unsustainable in the long run — unless policy-maker were down to compromise on undesirable maternal, infant, and total mortality rates, poverty and resource insecurity (UNFPA, 2014).

Further non-religious argumentations of the Contraceptive Mandate’s detractors rest on the “lump labour fallacy” myth. This phenomenon — whose occurrence is supported by weak or none empirical evidence — refers to the presumptive existence of only a fixed number of work positions in the labour market (Kruegman, 2003). From this point of view, the delayed retirement of the “greying workforce” would congestion the labour market, preventing younger workers to enter it — similarly to the reasoning underlying the pension system potential collapse. Again, empirical evidence presented by Harvard TH Chan School of Public Health (2016) discovered self-reinforcing dynamics in the creation of new workplaces subsidiary or functional to the existing ones. Notwithstanding the fact that the increased life expectancy paired with birth control opposers’ desired fertility rate burst would only worsen the hypothetical lump labour fallacy, unless mortality rates would also undergo a sudden spike.

As for the religious or ethical argumentations, instead, the right-wing conservatives — generally fiercely opposing contraception — found support in various dictates that date back to the pillars of Latin Christianity laid by

Saint Augustine between the fourth and fifth century after Christ. Augustine peculiar sensibility towards “carnal sins” like concupiscence and reproduction, led him to take a stand against that: all kind of sexual intercourse was seen as a sinful repercussion of Eve’s original sin interfering with human redemption. Even marital sex was regarded as impure, although “mere fornication” could be condoned only if it was justified by procreation purposes. Furthermore, in the XIII century, Thomas Aquinas revised Aristotle’s theorisations on female gender with a Christian insight. Women enshrined the most of the original sin and were therefore unsuited to ever represent God. This perspective laid the basis for the exclusion of women from leadership roles and ordain — and, in some cases even from social life.

In response of the feminist movements from the ‘20s and ‘30s, Pope Pius XI opposed women’s thrive for emancipation and suffrage that would distort femininity traits as portrayed by the Scriptures. Namely, in *Casti Connubii* (1930), Pope Pius XI remarked the one role assigned to women by God, as obedient wives and caring mothers. Again, female subjugation to males was justified by the respective complicity in the original sin, recalling Augustine’s belief that women would find redemption under men’s guidance (Ruether, 2006).

Under the papacy of John XXII and John Paul II — after the universal suffrage battle was won by feminists — the subordination of one gender to the other was firmly replaced by the idea of “complementarity” (*Evangelium Vitae* [Encyclical Letter on the Gospel of Life], 1995): “*when we read in the biblical description the words addressed to the woman: ‘Your desire shall be for your husband, and he shall rule over you’ (Gen 3:16), we discover a break and a constant threat precisely in regard to this “unity of the two” which corresponds to the dignity of the image and likeness of God in both of them. But this threat is more serious for the woman, (...) whereas only the equality resulting from [men and women’s] dignity as persons can give to their mutual relationship the character of an authentic ‘communio personarum’*” (*Mulieris Dignitatem*, 1988, *supra* note 1, 10).

Despite the misleading epithet of “the Feminist Pope” (*Evangelium Vitae*, 1995), John Paul II did not separate the Church’s dictates from their long held

gender-based structures (Callahan, 1998). On one hand, the Holy Father encouraged the whole society to enact structural adjustments to facilitate women's inclusion in social activities at all levels and promote equality. On the other hand, he remarked with equivalent tenacity some (allegedly) innate differences that differentiate one sex from the other (*Mulieris Dignitatem* [Apostolic Letter on the Dignity and Vocation of Women], 1988; Allen, 2009). For instance, in *Love and Responsibility* (Wojtyla, 1960, 109–14), the Holy Father wrote “[i]t is pretty generally recognised that woman is ‘by nature’ more sentimental, and man more sensual”. Also, he remarks how females and males’ emotional immaturity can be cultivated in marriage and transformed into mature marital love (Wojtyla, 1960).

Moreover, Pope John Paul’s commentary on the line “*Your desire shall be for your husband, and he shall rule over you*” (Gen 3:16; *Mulieris Dignitatem*, 1988, supra note 1, 10) seems to recall Pope Pius XI’s perspective on the separation of social roles based on gender: “*even the rightful opposition of women to what is expressed in the biblical words, ‘He shall rule over you’ (Gen 3:16) must not under any condition lead to the “masculinisation” of women. In the name of liberation from male ‘domination’, women must not appropriate to themselves male characteristics contrary to their own feminine ‘originality’*” (*Mulieris Dignitatem*, 1988, supra note 1, 10).

Aside from gender-based social roles, privileges and duties, in the late 1960s the theological and cultural debates ignited in the '20 by Margaret Sanger included reproductive rights in the feminists’ agenda. Both Roman Catholics and Protestants strongly opposed women’s claims on all fronts — i.e., the “liberalisation” of sex education, abortion, birth control. Catholics finally compromised on some sort of birth control, allowing married couples to rely on the (highly inaccurate) “rhythm method” under certain conditions (Pope Paul VI, 1968).

Pope Paul VI forecasted that the sexual revolution would have brought severe repercussions onto individual and collective spheres, in terms of widespread infidelity, venereal diseases, and moral decline¹⁰². In the encyclical

¹⁰² Birth control would “*lead to conjugal infidelity and the general lowering of morality*” (Pope Paul VI, 1968).

Humanae Vitae, the Pope's warnings to all people and policy-makers gravitate towards imminent, severe changes in the traditional role of women and men — and families — within the civilised society, as a direct consequences of the “contraceptive mentality” penetration within the modern world's culture (Bradshaw, 2011). For example, Pope Paul VI also addressed the repercussions of birth control on women's conditions, in particular with respect to their sphere of competence — at the time, it mainly consisted on their hearth and home¹⁰³: “[a man will] no longer [care] for her physical and psychological equilibrium [and will come to] the point of considering her as a mere instrument of selfish enjoyment and no longer as his respected and beloved companion”. (*Humanae Vita*, Pope Paul VI, 1968; Rev. Benjamin P. Bradshaw, 2011)

The historical context the audience to which these claims were addressed were such that their echoes can still be heard in present days. As a matter of fact, the *Humanae Vita* encyclical was released shortly after some of the US Supreme Court's milestone rulings¹⁰⁴ on contraception and abortion had set the basis for international battles over civil rights expansion like the legalisation of hormonal female birth control in and outside of the United States. While President Johnson was signing the Social Security Amendments in 1965 establishing the Medicare and Medicaid programs, the Supreme Court was ruling in *Griswold vs Connecticut* that married couples' use of contraceptives was to remain out of the states' jurisdiction. The decision (supported by a 7 to 2 majority) was based on the interpretation of the Inclusion Clause, for which a married couples' sexual and reproductive decisions go under the shield of privacy rights stated in the Fourteenth Amendment.

On the other hand, male contraception — known in rudimental forms¹⁰⁵ from the dawn of civilisation — experienced a controversial, yet exponential

¹⁰³ According to the U.S. Department of Labour, the labour force participation rate of women sore from 32.7% in 1948 to 41.6% in 1968. It spiked in 1999 at 60% and decreased again thereafter reaching 56.7% in 2015. By contrast, from 1948, males' participation rates decreased persistently from 86.6% to 69.1% in 2015.

¹⁰⁴ e.g. *Griswold vs Connecticut* (1965) and *Roe vs Wade* (1973).

¹⁰⁵ Ancient civilisations would use animals' intestines as condoms.

distribution during World Wars I and II (Primrose, 2012). Namely, the dispatched American soldiers' official equipment included free condoms, in order to avoid STDs epidemics. At the end of WWII, male contraception faced an even more fierce opposition on behalf of women, who saw in it a contrivance for their partners to get away with conjugal infidelity (Primrose, 2012) — puzzlingly enough, the legalisation of female hormonal birth control was instead set to encounter a different reception by female public (Primrose, 2012).

When birth control was decriminalised in the US, the focus of the debate shifted to abortion. The stickiness of the transition from family planning to abortion was so insidious that it still constitutes the core of nowadays diatribes, better known by the name of “fungibility”. This term evokes the misconception that governmental funds can be interchangeable within family planning (or even healthcare) providers that receive federal subsidies (Dreweke, 2016). Although the bias is apparent, regulations like the Helms Amendment (1973) and the Hyde Amendment¹⁰⁶ still apply to ban foreign and federal subsidies respectively as funding to practice abortion “*as a method of family planning*” (Barot, 2016, 16(3):9–13). For this reason, the ACA's detractors would often address abortion and contraception public funding as one double-fold issue — and hence oppose it *in toto*.

The erroneous identification of contraceptives and abortion as “one and the same” rests on the Declaration of the Immaculate Conception (1854), which identified life commencement at conception, since “*Mary's soul was present from the first moment of conception*” (Ruether, 2006). Up to that date — and ever since Aristotle's times — the commonly shared view on the commencement of life would reference to the moment that a soul enters a human body¹⁰⁷, which is not formed until the fourth month of pregnancy (Ruether, 2006). The Declaration on Procured Abortion of 1974 would hence

¹⁰⁶ Since Medicaid is a publicly funded program aimed at providing (comprehensive) healthcare to low-income eligible residents, the Hyde Amendment constitutes a factual barrier for these population blocks to access safe abortions (Dreweke, 2016).

¹⁰⁷ This view is still generally accepted by Islam.

prohibit abortive practices under all circumstances¹⁰⁸, even though no unanimity was achieved about human life commencement.

As a result, several religious groups pushed for the criminalisation of birth control. In the early 1970s abortion was decriminalised in the US if occurring in the first two trimesters, and other European countries followed close on that path. Because of the Vatican's representative power in international organisations like the United Nations as a permanent observer, the fight against reproductive rights — and their categorisation as human rights — spread globally. For instance, the Holy See turned down the Program of Action presented at the 1994 United Nations Conference on Population and Development in Cairo, which would juxtapose the “traditional” promotion birth control to other policies aimed at boosting improvements in economic development and access to healthcare and education (CFFC, 1998). The official motivation was that the Program's formulation would disguise its actual aims of “*promoting abortion as birth control, lax sexuality and homosexual marriages, none of which were actually mentioned in the document*” (Ruether, 2006).

At national level, the matter has been handled by the judicial branch of the American sovereign government. Equal in power and dignities to the other two branches (legislative and executive), it is headed by the Supreme Court¹⁰⁹ and it is in charge of interpreting the laws produced and approved by the legislative organs (i.e., the Congress and state councils) and sanctioning infringements. Under federalism, governmental authority rests both in national and local representatives, in such a way that the States' governments are formally expected to develop and enact their own federal laws and policies on matters like public health, moral, and order, providing these laws prove

¹⁰⁸ To provide an emblematic example of the extent of the fight to birth control — abortion and emergency contraception (EC) in particular — the “Feminist Pope” John Paul II not only opposed the distribution of EC in refugee camps during the Kosovan conflict in 1993, but also he reached out to Bosnian Muslim women who had been victims of rape during war time to “*accept the enemy into them*” and turn their abuses into love (Kissling, 1999, 12-14; Ruether, 2016) — and live births.

¹⁰⁹ The Supreme Court counts nine life-nominee justices whose duties comprise the settlement of States disputes, hearing of court appeals, and determination of the laws constitutionality.

consistent to the fundamental principles stated by the national sovereign law, the Constitution¹¹⁰.

Among all constitutional principles protected by the Bill of Rights (the first ten amendments of the US Constitution), religious freedom¹¹¹ opens the list of fundamental civil rights and liberties. More into detail, civil rights curb on the power of majorities on decision-making processes affecting collectivity, while liberties mainly consist of limitations upon the government interference on personal freedom. Civil rights categorise as procedural and substantive: the former are a set of tools for the government to dispose of when intervening on privates and States' matters, whereas the latter draw the boundaries to the field of intervention of central power.

The Establishment Clause enshrined in the First Amendment is an emblematic example of substantive rights, for it prohibits the establishment of any national religion and it guarantees the right to free exercise of individual religious believes different from the most widespread. This clause is often paired with the Fifth Amendment, which grants protection against discrimination based on religion, defined as a violation of the right to "*the equal protection of the laws, equality of status under the law, equal treatment in the administration of justice, and equality of opportunity and access to employment, education, housing, public services and facilities, and public accommodation because of their exercise of their right to religious freedom*" (US Commission on Civil Rights, 1979).

Continuing, the No Religious Test Clause (Article VI, Clause 3, US Constitution) states that "*no religious test shall ever be required as a qualification to any office or public trust under the United States*" but does not

¹¹⁰ The Constitution was first written by 55 patriots that reunited in Philadelphia in 1787, drafting the cornerstones of the American political system as we know it today. Peculiarly, more than half of the men in such group had received college education (at the time, only the 0.001% of Americans had attended university courses), 40% of them had served in the army and the great majority were financially wealthy.

¹¹¹ Establishment Clause, First Amendment: "*Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof.*" The First Amendment expresses the will of Framers of the Constitution to endorse a clear schism between any supernatural power representatives and the government.

expressively guarantee protection to non-believers¹¹² — who had long constituted the strict minority block among American voters — even though in *Everson vs Board of Education* (1947), the Supreme Court had unanimously assessed that the First and Fourteenth Amendments “*repeat and again reaffirm that neither a State nor the Federal Government can constitutionally force a person ‘to profess a belief or disbelief in any religion’. Neither can constitutionally pass laws or impose requirements which aid all religions as against non-believers, and neither can aid those religions based on a belief in the existence of God as against those religions founded on different beliefs*” (330 U.S. 1 67 S. Ct. 504; 91 L. Ed. 711; 1947 U.S. LEXIS 2959; 168 A.L.R. 1392).

In fact, the Supreme Court has repeatedly remarked the boundaries between the law of the land and that of the heavens, consistently to the considerations expressed by Thomas Jefferson¹¹³ about the need of letting legislation rule over the actions, rather than opinions, so that religious duty would never legitimate criminal conducts¹¹⁴. A series of statements by the Supreme Court has crowned the Constitution as the supreme “law of the land” in several similar disputes between the national and local governments. For example, the first instance resolution of the case *Barron vs Baltimore* (1833) had the Supreme Court restricting the applicability of the Bill of Rights to National government only (States were hence free to legislate at their will). However, this interpretation was then rectified according to the Fourteenth Amendment on equal protection — for which no state government is empowered to rule against constitutional liberties and rights.

As a matter of fact, the Fourteenth Amendment aims at harmonising the Constitution’s fundamental principles throughout the country’s territories,

¹¹² I.e., either atheists, agnostics, or non religious individuals or groups.

¹¹³ American Founding Father; main author of the Declaration of Independence from 1776 and third President of the United States of America.

¹¹⁴ E.g., in *Reynolds vs United States* in 1878, the Supreme Court forbade bigamy reasoning that to justify certain conducts as part of religious duties could eventually “*make the professed doctrines of religious belief superior to the law of the land, and in effect to permit every citizen to become a law unto himself*” (98 U.S. 145. 25 L. Ed. 244; 1878 U.S. LEXIS 1374; 8 Otto 145).

protecting all kind of minorities¹¹⁵ from discrimination. According to this perspective, both federal and local laws must undergo “strict scrutiny” (the most stringent standard of judicial review, that generally applies in case of fundamental rights infringements) in order to pass as constitutional. In other words, both state and national regulations are expected to meet some criteria in order to be found lawful: they must comply with protected and fundamental liberties, undue burden principle (which prevent excessive discriminatory load for minorities to bear), be justified by a compelling governmental interest, and resort to the least restrictive means in its pursuit. On the other hand, when reviewing a bill’s constitutionality, the Supreme Court would generally have to comply with the so-called “rational basis standard” (the loosest level of judicial scrutiny). This imposes the only requirement for the government to meet is to prove that the examined policy’s logic is consistent to its purpose, implying that a bill would generally be approved unless it produced unjustifiable violations that outrank the aspired benefits.

Both procedures differ from the “intermediate scrutiny” applied to legislation that addresses discrete groups discrimination issues of all kinds (such as sex-based classification or free speech). As the term suggests, the latter is indeed a compromise between rational basis standard and strict scrutiny (the most rigorous form of review), for it weights civil and common law components of a proposed regulation as compared to targets and costs. Namely, the relevance of a simplified anti-discrimination legislative *iter* — such as “rational basis standard” — lies in the increasing¹¹⁶ demand of legal

¹¹⁵ The term “minority” is hereby used in its broader sense. Feagin (1984) and Schaefer’s (1993) provide five traits that identify a minority group as compared to the rest of the population (majority): (1) subordinated position of the group’s members; (2) observable distinctive characteristics (physical and/or cultural); (3) collective identity and awareness of discriminatory conducts against the group members; (4) involuntary membership in the minority; and (5) tendency to in-group marriage. Moreover, minority groups can be categorised based on race, ethnicity, gender or sexual orientation, religion. Each trait can be stringent only to certain categories of minorities. For instance, involuntary membership actually applies to religious minorities, although there is empirical evidence that cultural traits are passed on almost unaltered from one generation to the other (Guiso, Sapienza, Zingales, AEA, 2006); also, in-group marriage is not typical of women, although all other constraints do apply to this group.

¹¹⁶ According to the Equal Employment Opportunity Commission (EEOC) in the past decade the number of gender-based discrimination charges has increased by 35%. One in five charges of discrimination against women involve claims of pregnancy discrimination.

protection against discriminatory conducts in the workplace, whereas its rigour — closer to “strict scrutiny” is imputable to the close link of the matter to constitutionality issues.

Chapter 3 ~ The Contraception Mandate and the labour market: historical premises and implications.

If on one hand the ACA's contraception mandate is facing allegations of discrimination at the expenses of religious individuals and organisations, on the other it could confine and repress discrimination in various spheres, from healthcare to education and labour. This interpretation is well described by Becker's view (1964) on investments in "health capital" as analogous to those in other "*forms of human capital such as education*" (Currie and Madrian, 1999, Ch.50, p.3311).

In this perspective, health would become an influential component of consumers' utility¹¹⁷, as well as a major concern for both producers and policy makers, as suggested in previous sections. Namely, changes in the individuals' health status would reflect in variations of both their likelihood and propensity to participate in market activity, both on the side of production and consumption. Moreover, externalities related to health conditions would also be detrimental to non-market activities like leisure (Currie and Madrian, 1999, pp.3311-3312), contributing to a cascade effect.

In the light of these and precedent observations, this chapter will continue the discussion over the forms of protection against discrimination, collocating the ACA within the set of anti-discrimination laws and programs enacted by legislative and executive organs in the US.

¹¹⁷ Grossman (1972) theorised the above reasoning in an economic model representing consumers' intertemporal utility maximisation problem:

$$\sum_{t=1}^T E_t(1/(1 + \delta)^t U_t + B(A_{T+1}))$$

where: d = discount rate; $B(\cdot)$ = bequest function; A = assets; $U_t = U(Q_t, C_t, L_t; X_t, u_1, e_{1t})$, with Q_t = stock of health, C = consumption of other goods, L = leisure, X = exogenous taste shifters, u_1 = permanent individual specific taste shifters, e_1 = shock to preferences (Currie and Madrian, 1999, p. 3311).

3.1. Historicisation of protection against discrimination

The first step towards the development of a flexible protection against discrimination was taken in 1961 by President J.F. Kennedy. His signature on the Executive Order 10925 (March 6, 1961) established the President's Committee on Equal Employment Opportunity, whose first disposition ruled government contractors to *“take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, colour, or national origin.”*

In 1963 a step further was taken with the enactment of the Equal Pay Act (EPA, Pub. L. 88-38), which prohibits sex-based wage discrimination by *“employers engaged in commerce or in the production of goods for commerce”*. Not only the EPA acknowledged the existence of such type of discriminatory conducts, but in its declaration of purpose¹¹⁸ it also assessed that *“wage differentials based on sex:*

- (1) depresses wages and living standards for employees necessary for their health and efficiency;*
- (2) prevents the maximum utilisation of the available labor resources;*
- (3) tends to cause labor disputes, thereby burdening, affecting, and obstructing commerce;*
- (4) burdens commerce and the free flow of goods in commerce; and*
- (5) constitutes an unfair method of competition.”*

Shortly after the EPA's enactment, Title VII of the Civil Rights Act of 1964 (Pub. L. 88-352) became a milestone law in the pathway to social and opportunity equality. Its applicability would extend to all labour organisations with fifteen employees or more, with exception of *“certain aliens and (...) religious corporation, association, educational institution, or society”* that would employ *“individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities”* (Title VII, SEC. 2000e-1. [Section 702, (a)] - Applicability to foreign and religious employment).

¹¹⁸ Not reprinted in US Code [section 2, (a)]

Title VII actually condemned a wide range of discrimination — on the basis of race, colour, religion, national origin, or sex¹¹⁹ — as well as any type of retaliation in response to complaints or charges filed about discrimination, or participation in an employment discrimination investigation or lawsuit (Title VII, SEC. 2000e-3. [Section 704, (a)]). It also demanded employers to “*reasonably accommodate applicants' and employees' sincerely held religious practices, unless doing so would impose an undue hardship on the operation of the employer's business*”. But more importantly, the Civil Rights Act of 1964 established the U.S. Equal Employment Opportunity Commission (EEOC). Headed by Vice-president L. Johnson, the EEOC became fully operative in 1965, under J. F. Kennedy presidency, and has ever since been responsible for undertaking a wide range of anti-discriminatory actions, from the enforcement of federal laws, to the assessment of alleged violations concerning all types of discrimination and work contexts¹²⁰.

Social policy's set of tools was further enriched by the Age Discrimination in Employment Act (ADEA) of 1967 (Pub. L. 90-202), addressed at workers of 40 years of age and over, and the Rehabilitation Act of 1973 (Pub. L. 93-112), ground-breaking to Title I of the Americans with Disabilities Act of 1990 (ADA). Both laws would condemn discrimination against a qualified person with a disability, the former in the specific framework of federal government employment, also in private sector and local governments. Under the ADA¹²¹, employers were required to “*reasonably accommodate the known physical or mental limitations of an otherwise qualified individual with a*

¹¹⁹ The regulation acts consistently to a cascade-like step procedure: if an individual, or a group, is found to fall into a protected class, then the burden of proof of the alleged violation passes onto the employer, who will have to prove his/her actions or behaviours are imputable to business necessities solely, rather than a discriminatory conduct; if s/he succeeds in doing so, the burden of proof would then shift back to the allegiant.

¹²⁰ Staff selection and lay-off, promotions, harassment, training wages, benefits, working hours and conditions. Also, more into detail, the EEOC has authority upon discriminatory conducts in workplaces with fifteen employees or more, on the basis of: age, disability, equal pay/compensation, genetic information, harassment, national origin, pregnancy, race/colour, religion, retaliation, sex, sexual harassment.

¹²¹ The Genetic Information Nondiscrimination Act of 2008 (GINA, 2009) provided analog and complimentary protection to the ADA, including both personal and family members' anamneses into the set of relevant bases of discrimination, not only by employers but also by health insurances.

disability who is an applicant or employee, unless doing so would impose an undue hardship on the operation of the employer's business" (Pub. L. 101-336, ADA). Additionally, the ADA stated the implicit categorisation of individuals with physical or mental disabilities as a minority group, observing that, "*based on census data, national polls, and other studies*", they do "*occupy an inferior status in our society, and are severely disadvantaged socially, vocationally, economically, and educationally*" (SEC. 12101. [Section 2], (a) Findings, (6)).

A major achievement of such dispositions was the Congress' acknowledgment of the detrimental impact of structural discrimination patterns onto the American liberal economy, as a form of protectionism¹²²: "*the continuing existence of unfair and unnecessary discrimination and prejudice denies people with disabilities the opportunity to compete on an equal basis and to pursue those opportunities for which our free society is justifiably famous, and costs the United States billions of dollars in unnecessary expenses resulting from dependency and non-productivity*" (SEC. 12101. [Section 2], (a) Findings, (8)).

Consistently to the international debate on the matter, Section 703 of Title VII exempted¹²³ the employer from "*pay[ing] for health insurance benefits for abortion*", unless medical complications would either threaten the mother's life or have arisen from an abortion (Section 703 (h) of Title VII, as amended by Pregnancy Discrimination Act of 1978). On the other hand, Section 701, (k) of Title VII was amended in 1978 by the Pregnancy Discrimination Act (PDA), which condemned unfair conducts upon "*pregnancy, childbirth, or a medical condition related to pregnancy or childbirth*" for those were to be regarded as discrimination on the basis of sex, as confirmed by Honorable Judges Kanne, Wood and Evans in *Griffin vs Sisters of Saint Francis* (2007), who remarked that "*pregnancy is a proxy of gender and therefore discrimination against pregnancy is discrimination against women*" (Inc., 489 F.3d 838, 7th Cir. 2007). The PDA also prescribed that women in the above

¹²² Nobel Prize winner Paul Krugman would recall such perspective when covering the lump labour fallacy issue in his article on The New York Times in 2003.

¹²³ Nevertheless, the law does not preclude employers and employees to stipulate different agreements on the provision of abortion benefits (Section 703 (h) of Title VII, as amended by Pregnancy Discrimination Act of 1978).

stated conditions were to be treated by the employer “*as other persons not so affected but similar in their ability or inability to work*”. According to the EEOC, the number of gender-based discrimination charges has increased by 35% in the past decade, with one in five claims concerning pregnancy discrimination. A 2013 report by EEOC found that pregnancy discrimination rate is disproportionately higher in those fields where women constitute about three quarters of the workforce employed (mainly healthcare, followed by finance, education, real estate, public administration and retail).

While supervising on the enforcement of all above listed federal laws, the EEOC has also competences onto “*carry[ing] out educational and outreach activities (including dissemination of information in languages other than English) targeted to — (A) individuals who historically have been victims of employment discrimination and have not been equitably served by the Commission*” (Title VII, SEC. 2000e-4. [Section 705]). Since 1966, the EEOC have periodically been collecting confidential data from public and private labor organisations, in order to assess the proportion in which gender and racial/ethnic minorities are employed in the workforce. All employers with 100 or more employees (lower thresholds apply to federal contractors) file a mandatory Employer Information Report (EEO-1¹²⁴)¹²⁵.



¹²⁴ More information about the EEO-1 and job categories can be found at <http://www.eeoc.gov/employers/eeo1survey/index.cfm>.

¹²⁵ 2013 is the most recent fiscal year for which information is available. Estimates are drawn from a data collection of approximately 70,000 employers' reports, specifying employees' characteristics such as gender and race/ethnicity with respect to job categories (managerial, administrative, etc.).

Other anti-discrimination provisions not enforced by the EEOC follow hereafter, paving the way to legal protection against gender-based discrimination. Title VI Of The Civil Rights Act of 1964 extended protection against discrimination on the basis of race, colour, or national origin to all programs and activities¹²⁶ supported by federal funds. Despite the high volume of organisations and programs partly or entirely supported by federal funding throughout the States (e.g., Title X, Medicaid, Medicare, ...), the Supreme Court's flexible interpretation of Title VI has confined its beneficial impact below full potential.

A more literal reading of the disposition could have greatly facilitated the enforcement of the ACA's Contraceptive Mandate — however the Court's rulings achieved to avoid several programs (such as pro-life organisations and Planned Parenthood¹²⁷) to be systematically excluded from federal funding. As a matter of fact, the Supreme Court's strict interpretation of Title VI, the Civil Rights Act of 1964, Title IX of the 1972 educational amendments, the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975 endured until 1984, when the Court was called to hear the case of conservative Christian college *Grove City College* in Pennsylvania alleged of discriminatory practices. The Supreme Court ruled that, a college that had been receiving federal funding assigned for one or more specific programs shall only be banned from engaging in discriminatory conducts within the recipient program. The applicability of anti-discrimination laws was then narrowed to specific branches instead of to the entire institution.

¹²⁶ A program or activity is defined as “(1)(A) a department, agency, special purpose district, or other instrumentality of a State or of a local government; or (B) (...) each other State or local government entity; (2)(A) a college, university; or other postsecondary institution, or a public system of higher education; or (B) a local educational agency (...), system of vocational education, or other school system; (3)(A) an entire corporation, partnership, or other private organisation, or an entire sole proprietorship --(i) if assistance is extended to such corporation, partnership, private organisation, or sole proprietorship as a whole; or (ii) which is principally engaged in the business of providing education, health care, housing, social services, or parks and recreation” (Title VI, Civil Rights Act of 1964, §2000d-4a).

¹²⁷ Planned Parenthood Federation of America is a tax-exempt non-for-profit corporation under Internal Revenue Code section 501(c)(3), and the larger provider of a range of reproductive health services, from sexual education programs to birth control practices, throughout the US (Kelly, 2015).

Two years after the ruling on *Grove City College* case, the Congress approved a bill to restore the previous, stricter interpretation of civil rights and women's rights acts. In that occasion, President Reagan not only vetoed the bill, but also claimed that it would “*vastly and unjustifiably expand the power of federal government over the decisions and affairs of private organisations, such as churches and synagogues, farms, businesses and state and local governments*” (Anderson, 2004). According to the conservatives' reasoning, an interpretation of civil rights acts as endorsement measures of affirmative action, would be a double-edge sword: on one side there is the threat of government excessive entanglement, on the other, an interpretative confusion about which minorities' protection shall be prioritised (Anderson, 2004).

The dilemma involving minorities protection and collectivity equal opportunities can be better explained by a case brought to the attention of the Supreme Court in 2003. The University of Michigan denied admission to two white women, aligning to the institution's policy on affirmative action¹²⁸. The women hence claimed the admission selection criteria violated their rights under the Civil Rights Act of 1964 and the equal protection clause of the Fourteenth Amendment of the US Constitution. The University of Michigan confirmed that race was indeed one criterion for admission, but the Supreme Court's found the university's policy constitutional, since is constituted affirmative action against discrimination.

From this point of view, the practice of affirmative action was to be considered as temporary, compensatory measures aimed at evening out existing unbalances imputable to precedent practices of racial

¹²⁸ Policies such as *quotas* in hiring or admission procedures are considered part of affirmative action, although the definition and rationale of affirmative action have greatly evolved since its creation during the Great Depression and its first ruling in 1971 to present date (Anderson, 2004).

discrimination.¹²⁹ Notwithstanding the Court's decision only held a 5 to 4 majority, Justice Sandra Day O'Connor explained that the Court would “*expect that 25 years from now, the use of racial preferences will no longer be necessary*”. Analogous reasoning had already been extended by jurisprudence from racial to age- and gender-based discrimination disputes (e.g., *Quarles vs Philip Morris* on seniority, 1968).

Continuing, in 1965 President L. B. Johnson signed the Executive Order 11246, to forbid discrimination on the basis of race, nationality, colour, religion, or sex by federal contractors (and certain subcontractors), whom are also required to actively endorse equal employment opportunity in the workplace. Over a decade afterwards, protection against discriminatory practices was further extended by the Civil Service Reform Act of 1978 (CSRA), which made it illegal to discriminate against a federal employee or job applicant on the bases of race, colour, national origin, religion, sex, age, or disability, or any other factor fairly irrelevant to the employee's performance (e.g., marital status, political affiliation, sexual orientation). Also, the CSRA prohibited any form of retaliation against a federal employee or job applicant for exercising the right to file a complaint, grievance, or an appeal.

Another battlefield concerned the establishment of national standards¹³⁰ for safer conditions of work and healthier workplaces in various industries. This battle was fought in 1970 by President Nixon with the approval of the Occupational Safety and Health Act (OSHA), which also enabled employers complying with the OSHA's national standards to receive protection against undue compensations in case of injuries or diseases related to the employees' work environment or tasks.

¹²⁹ Despite the equal protection clause of the Fourteenth Amendment and the Fifteenth disposition of equal voting rights for all races, by the 1880s some states's laws would restrict these constitutional rights (e.g. by imposing racial segregation) in the attempt to preserve the whites' supremacy. In fact, in 1900 the Richmond Times read on strict segregation to “*be applied in every relation of Southern life*” as “*God Almighty drew the colour line and it cannot be obliterated.*” Also, signs reading “whites only” or “coloured” were commonly hung in public or private venues and business to designate restrooms (Anderson, 2004) likely, the racial translation of nowadays gender distinction between “ladies” and “gentlemen”.

¹³⁰ Standards concern training, medical equipment on workplace, limits to hazardous substances exposure, emergency procedures, etc.

Interestingly, the US National Institute of Mental Health (NIMH) refers to stressful environmental factors or life-changing events (such as job loss) as being among the top three triggers of major depressive episodes, along with genetics or family history, and the use of medication or substances. In fact, depression (as from the DSM-IV¹³¹) was reported to be second to only family crisis and stress among the top list of workplace problems for employee assistance professionals (Employee Assistance Professionals Association 1996 Survey). Also, it has been observed that workers tend to suffer from depression more often in the early years of their career, and the condition is likely to become chronic or degenerate if untreated (retrieved from <https://www.nimh.nih.gov/health/topics/depression/index.shtml>).

A full recovery is achieved in 80% of cases, whereas over 14% of patients with severe depression will commit suicide (American Psychiatric Association, 1994). As for financial costs, treatments¹³² amounted to \$26 billion a year in 2003 (Greenberg et al., 2003). However, if untreated, depression can build up to an even more concerning plague, as costly as heart disease (a major cause of death worldwide) or AIDS (JOM, 1994), accounting for \$51 billion annual losses in absenteeism and productivity loss¹³³ (Conti and Burton, 1994). According to the NIMH (2016), major depressive disorder was one of the most common¹³⁴ serious mental conditions in the US, affecting 6.7% of Americans aged 18 and older, i.e., over 16 million people in 2015. Among these, an estimated 10.3 million (i.e., 4.3% of all American adults) had

¹³¹ Fourth edition of the Diagnostic and Statistic Manual of Mental Disorders.

¹³² Depression can be treated with psychotherapy, medications, or brain stimulation (EEC).

¹³³ As from the DSM-IV, among other symptoms of major depression, the subject exhibits chronic pain or physical conditions that fail to respond to treatment (e.g., headaches, or digestive disorders), lack of attention, and impaired memory and decision making skills, persistent fatigue or numbness, and recurrent thoughts of self-harm or suicide.

¹³⁴ According to the World Health Organisation (WHO, 2010), major depression affects 350 million people worldwide and constitutes a burden also in terms of disability due to mental and behavioural disorders.

at least one major depressive episode¹³⁵ with severe impairment¹³⁶ (2015 National Survey on Drug Use and Health).

In the light of these and other observations concerning mental health, it is easy to understand why the ACA put a special focus on the matter, dedicating funds and efforts to promote awareness and fight back the uprising trend of mental illness diagnoses (ACA, 2016). For example, depression accounts for 8.3% of all years lived with disability in the US, while 3% of total short term disability-leave days are due to depressive disorders (First Chicago EAP Study, 1989-1992). In more than 3 cases of depression out of 4, the employee is a female (First Chicago EAP Study, 1989-1992). Namely, relevant literature has unanimously assessed that females tend to be more exposed to unipolar disorder (depression) although it is yet uncertain whether the causes of such disproportion are to be found in genetic predisposition or rather environmental, cultural or social factors (NIMH, 2016).

As for genetic differences, men and women share 22 pairs of identical chromosomes XX, whereas the 23rd is a mismatched pair XY. The Y chromosome was commonly believed to be responsible for the discrepancy in the reproductive organs of males and females, assuming a functional equivalence of all other organs. In 2000 President Clinton reported that *“this fall, at the White House... we had this very distinguished scientist there, who is an expert in this whole work in the human genome. And he said that we are all, regardless of race, genetically 99.9% the same.”* However, researchers argue that such statement would be correct providing the comparison only involves individuals of the same sex — otherwise, the similarity would drop to

¹³⁵ According to the fourth edition of the Diagnostic and Statistic Manual of Mental Disorders (DSM-IV), the NSDUH defined a major depressive episode as a period of two weeks or longer in which the subject exhibits *“either depressed mood or loss of interest or pleasure, and at least four other symptoms that reflect a change in functioning”*, such as sleep-, eating- disorders, and/or drops in energy, concentration, and self-image. *“Unlike in the DSM-IV, no exclusions were made for a major depressive episode caused by medical illness, bereavement, or substance use disorders”* (retrieved from <https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-with-severe-impairment-among-adults.shtml>).

¹³⁶ Severe impairment is associated to ratings higher than seven of the Sheehan Disability Scale (SDS). According to the SDS procedure, subjects rate 0 (the lowest) to 10 (the highest) the level of impairment caused by their condition in carrying out tasks concerning home management, work, intimate relationships and social life (retrieved from <https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-with-severe-impairment-among-adults.shtml>).

98.5%, which equals the percentage of genome in common between men and chimpanzees.

Consistent differences between men and women have also been also observed in areas that have little or nothing to do with the reproductive system. For instance, recent studies have shown that cellulite would commonly affect women rather than men due to the different epidermis structure of the two sexes. Also, the difference in severity and occurrence of dilated cardiomyopathy¹³⁷ (Sisakian, 2014) remains unexplained by generic tools or hypotheses other than sex hormones intervention — which stems from the interaction of different organs, rather than the reproductive tract only. As far as cultural and environmental factors are concerned, an analysis of European data (Brenna and Di Novi, 2015) unveiled a causal relationship between being a female caregiver (to elderly family members) and the probability of suffering of major depressive disorder, particularly in environments (e.g., Mediterranean areas) where females are culturally designated as care-providers.

In addition, large sample¹³⁸ studies found evidence of some degree of correlation between major depression and the use of female hormonal contraceptives (Lidegaard, Rabin, 2016). Although hormonal contraceptives lists of potential side effects already included “mood changes” and depressive episodes, relevant research is extremely cautious in presenting its results. Even after accounting for those factors potentially affecting the woman’s predisposition to suffer of depression — such as education level, or polycystic ovary syndrome or endometriosis¹³⁹ — some degree of connection remains (IARC, 2007; Lidegaard, Rabin, 2016). For instance, the risk of starting antidepressant medication reportedly increased in the first year of hormonal contraceptives (either patches, vaginal rings, pills or IUDs containing progestin), as compared to the year before commencing it (Lidegaard, Rabin, 2016). Generally, throughout the duration of the study, women on hormonal

¹³⁷ CDM is a condition that causes the heart walls to thin, resulting deadly for men at a much younger age than women (CDCP, 2015).

¹³⁸ Data from the Danish national health database was used to track more than 1 million women aged 15 to 34, for six years on average, between 2000 and 2013.

¹³⁹ Extremely painful conditions often treated with hormonal birth control.

birth control were 23% to 100% more likely to start an antidepressant than women not on hormonal birth control (Lidegaard, Rabin, 2016).

Age appeared to be strongly and inversely correlated to the risk of being prescribed an antidepressant, with peaks for 15 to 19 years old subjects using hormonal patches, vaginal rings or progestin-releasing IUDs, who were found thrice as likely as teens not taking hormonal birth control — however, teenagers on the “traditional pill” (containing oestrogen and progestin) and those on the “mini-pill” (containing progestin only) only incurred in a twofold greater risk (Lidegaard, Rabin, 2016). These results are consistent to the latest findings in neuroscience, bringing supportive evidence to the hypothesis of a close relation between hormonal imbalances and both mental and physical conditions. In fact, the human metabolism is responsible for maintaining homeostasis and balance in hormonal secretion. For example, oestrogen not only affects reproductive functions but also cognitive ability and emotions¹⁴⁰. Oestrogen is metabolised to good C2 and bad C16, whose ratio determines the risk of breast cancer (Hilakivi-Clarke et al., 2013; Azab, 2015).

Moreover, altering the functioning of the hypothalamic-pituitary-adrenal-axis¹⁴¹ (HPAA) may result in a decreased chance of conceiving: for instance, the well-known “stress hormone” cortisol is metabolised from glucose and progesterone; hence, not only a direct shock in hormonal secretion but also a diet change may cause cortisol production to rise, cutting down the level of “fertility hormone” progesterone, ultimately leading to infertility (Azab, 2015). Because of the complexity of hormonal interactions and the characteristic low-acting of ovarian hormones, both their levels and fluctuations are hard to catch with clinical tests — not to mention the difference between synthetic hormones and natural ones, which complicates the estimation and forecast of the mechanisms underlying hormonal imbalance (Hilakivi-Clarke et al., 2013; Azab, 2015).

¹⁴⁰ Although this hormone etymologically associated with “females’ mood changes”, on elderly males oestrogen level are twice as high as a female coetaneous.

¹⁴¹ The HPAA connects the hypothalamus to the suprarenal area. The HPAA is the main gland interacting with other parts of the endocrine system to induce the production, release and absorption of hormones, such as follicle-stimulating hormones, cortisol and adrenaline. The former type of hormones contribute to growth and sexual maturity, whereas the latter are responsible for anti-inflammatory responses (which inhibit the immune system) and the so-called “fight or flight” response to stress stimuli, and perceived or actual threats.

Continuing, a Swedish study assessed that almost one in three women who lamented some pelvic pain would be found to suffer from a psychiatric condition (with no previous diagnosis), in particular, depressive or anxiety disorders — or both (Azab, 2015). These results seem to align with those reported by the US National Institute of Mental Health (NIMH, 2016) concerning the frequent comorbidity of depression and other serious medical conditions, especially among adults aged fifty or more, such as diabetes and gestational diabetes in early pregnancy, cancer, heart disease, and Parkinson's disease.

Alongside genetic predisposition and family history, postpartum depression risk factors include previous episodes of depression or anxiety (Dietz et al., 2007), complications during pregnancy or delivery (Blom et al., 2010), financial or emotional instability, especially between the newly-parents¹⁴² (Robertson et al., 2004; Howell et al., 2006), lack of support within the newly-mother's relational sphere (friends and family) in the care of herself and her newborn (Robertson et al., 2004), unplanned pregnancies (Milgrom et al., 2008), stressful life events during pregnancy or shortly after giving birth, such as job loss or personal illness.

Recent studies showed direct correlation between the duration of maternity leave and the likelihood to suffer from postpartum depression and anxiety (Cheng et al., 2009). Although from 1968 to present date the percentage of American women returning to their jobs after pregnancy raised from 50% to 65%, 35.4% of these newly-mothers would have to return to work within two weeks after delivery — likely increasing the risk of depression and anxiety disorders. For instance, postpartum depression is exhibited in nearly 15% of births, commencing within one month after delivery. Even though environmental and financial factors do play a role in depressive disorder episodes or chronic conditions, it is important to notice that postpartum depression has not been found correlated with age, race, ethnicity, nor economic status. Further studies found that postpartum depression not only affects 20% of women but also 10% of men (Dimpfl, 2015).

¹⁴² According to dr. K. Dimpfl, an estimated 30% of American men would leave their relationship after birth.

According to the World Health Organisation (WHO, 2010), major depression affects 350 million people worldwide and constitutes a burden in terms of disability due to mental and behavioural disorders too. In the United States, 17% to 21% of the workforce is expected to experience short-term disability at some point in their career, and 37% to 48% of workers with depression experience short-term disability, whereas an estimated 1.8% to 3.6% of American workers suffers from major depression (Kessler et al., 2008). Despite these estimates seem relatively stationary in time (Lerner, 2013), employers have often failed to recognise both the symptoms and the actual magnitude of indirect costs of depression (e.g., sick-leaves, lower productivity and commitment, training of new staff) (Lo Sasso et al., 2006). Also, generalised misconceptions about availability of treatment, and of the actual role of depression as a source of disability — or a side-effect of it — are such that private initiative fails to effectively address the issue, both on the side of courts' dispositions and on that of employees' compensation system (Goldberg and Steury, 2001).

Section 503 of the Rehabilitation Act of 1973 has promoted the employment of qualified people with disabilities in suitable positions. Interestingly though, pregnancy has often been juxtaposed to health conditions or disabilities by relevant legislation¹⁴³, aimed at granting equal opportunities to all categories of the workforce. In fact, several laws anti-discrimination on the basis of gender and disability equally support the preservation of benefits and work conditions, as well as the restoration of the employee's work positions, both in case of pregnancy and disability. However, the symmetry of legal protection granted to disable and pregnant workforce breaks to the lack of dispositions mirroring Section 503 of the Rehabilitation Act to support the recruitment of qualified pregnant workforce for suitable positions.¹⁴⁴

Again, the rationality assumption of economic theory seems to succumb to a curious political choice. Namely, except from permanent disabilities (which

¹⁴³ e.g., maternity leaves are listed with serious health conditions in the FMLA.

¹⁴⁴ Laws like the PDA do prohibit discrimination on the ground of pregnancy during recruitment procedures, yet fail to encourage or sponsor, e.g., through tax reductions or funds to those employer that hire pregnant employees and choose to provide a suitable work environment (for instance, installing breast-feeding positions or other facilities).

fall under the OSHA shelter), either serious illness or temporary disabilities or pregnancies — namely, they can even coexist — are all translatable into a temporary financial burden to the employer. The legislator does encourage — and even sponsor — the recruitment of workforce with disability (either temporary or permanent) but fails to provide equal support to pregnant workforce.

On the other hand, pregnancies may indeed be seen as incumbent and potentially recurrent threats to the employer's finances and productivity, transforming it from a temporary to permanent "condition" — and a cost to the employer. This interpretation is further reinforced by the likelihood that, even after the expiration of maternity leave, the employee would still be subject to her responsibility as a primary caregiver and can therefore dispose of permits and benefits granted by law to caregivers.

In fact, the Family and Medical Leave Act (FMLA) of 1993 (Public Law 103-3 Enacted February 5, 1993) requires certain employers to grant up to twelve workweeks of unpaid leave a year to eligible employees upon a serious health condition¹⁴⁵ of the employee himself or of a next of kin¹⁴⁶. More into detail, the FMLA is applicable to public agencies or business units counting fifty or more workers within a 75-mile radius¹⁴⁷, who have worked for that company for at least one year in total (intermittent work is also accounted for) and 1,250 hours within the last twelve months. This means that, on average, employees that worked less than 24 hours a week are not eligible for FMLA unpaid leave, unless differently agreed by the parties. Furthermore, intermittent leaves as well as reduced leave schedules are discouraged in case of maternity leave (unless the parties agreed otherwise).

¹⁴⁵ A serious health condition is defined as an "illness, injury, impairment, or physical or mental condition that involves: (A) inpatient care in a hospital, hospice, or residential medical care facility; or (B) continuing treatment by a health care provider" (FMLA, Public Law 103-3 Enacted February 5, 1993).

¹⁴⁶ The employee's next of kin is a son/daughter, a spouse (husband or wife) or a parent. (FMLA, Public Law 103-3 Enacted February 5, 1993).

¹⁴⁷ Public and local educational agencies fall under the FMLA cap regardless the number of employees.

On the other hand, permits for other medical conditions of the employee or a next of kin may be taken intermittently or on a reduced leave schedule, compatibly with the employer's business necessities and in agreement with the worker's health care provider (FMLA, SEC. 102, paragraph (b), Leave Requirement, (1)). The employer as well as the employee may elect to “*substitute any of the accrued paid vacation leave, personal leave, or family leave of the employee*” for maternity leave as well as for serious illness of the worker or a next in kin, provided under the FMLA, “*for any part of the 12-week period of such leave*”. However, the employer is under no circumstances required “*to provide paid sick leave or paid medical leave in any situation in which such employer would not normally provide any such paid leave*” (FMLA, SEC. 102., paragraph (d), Relationship to paid leave, (2), (A), (B)).

Arguably, the FMLA is paragraph (f), (1) restricted leaves conceded to spouses employed by the same employer to twelve workweeks cumulatively during a twelve months period for maternity leave. This section prevents one of the newly parents — or both — to enjoy the rights mandated by Section 104 of the FMLA¹⁴⁸ on employment and benefits protection, such as the restoration to the same or an equivalent position, with equivalent employment benefits, pay, and contract. In any case, paid or unpaid leave periods are not to be accrued for any seniority or employment benefits.

Most importantly to the purpose of this study, paragraph (c) of section 104 (employment and benefits protection) of FMLA also draws the guidelines to healthcare coverage maintenance. Employees eligible to maternity or serious health conditions leave permits shall remain under any “group health plan”¹⁴⁹ coverage “*for the duration of such leave at the level and under the conditions*

¹⁴⁸ Also, although the FMLA encourages the employees to notify in advance to the employer the beginning of the leave period, the law also forbids the employer to lay-off those employees requesting the leave before its commencement. In addition, an employer may legitimately refuse to restore highly compensated employees after leave, in case such practice would avoid “*substantial and grievous economic injury to the operations of the employer*”, and the employer timely notifies the intention to deny restoration. The phrase “highly compensated employees” refers to those among the highest paid 10 percent of the workforce employed by the employer within 75 miles from the employee's workplace.

¹⁴⁹ Group health plan is defined in section 5000(b)(1) of the Internal Revenue Code of 1986.

coverage would have been provided if the employee had continued in employment continuously for the duration of such leave.” Failing to return from leave, entitles the employer to recover the premium paid for the employee’s group health plan during the period of unpaid leave, unless the employee has incurred in further or persistent health complications that would grant the right to him/her further permits (FMLA, section 104, paragraph (c), (2), Failure to return from leave).

As for maternity benefits and permits, the PPACA (2010) amended Section 7 of the Fair Labor Standards Act (FLSA¹⁵⁰) of 1938 in order to entitle employees to “*reasonable break time (...) to express breast milk (...) for one year after the child’s birth (...)*” and to be provided of a suitable place (other than a bathroom) for expressing breast milk. On average, mothers who breastfeed their newborns need one hour per working day to express breast milk, that can be spread in fifteen minutes breaks approximately every three hours. These time off would relieve the mother from suffering unhealthy and unsustainable milk supply¹⁵¹ — lactation time generally reduces with the newborn weaning, about the sixth month of age.

Studies promoted by the government have highlighted the cost-effectiveness of “motherhood-friendly” practices in terms of both employees’ commitment and return of investment to the employer. Higher retention of

¹⁵⁰ The FLSA, also known as Wages and Hours Bill, established a national minimum wage and the forty-hour work week (defining full-time employment), overtime pay, and limits on “oppressive child labor”, both in private sector and public workplaces. States with local regulation on minimum wage would have to grant employees the higher between State and national (\$7.25 per hour effective July 24, 2009) ones. The inflation growth worsened by WWII caused the minimum wage policy to be ineffective. Due to structural discrepancies between monetary and legislative policies enactment, or simply between nominal and real dollar value, the FLSA underwent several amendments up to present day. As a matter of fact, minimum wage cap and its efficacy remain one major topic in the presidential campaign of 2016. Compensable overtime work was defined as any activity or task carried out by the employee that would benefit the employer. However, overtime pay for working during holidays or regular days of rest (e.g., weekends) is not mandatory under the FLSA, “*unless overtime is worked on such days*” (retrieved from https://www.dol.gov/whd/overtime_pay.htm). The definition of “oppressive child labour” referred to any type of working conditions that would undermine the child’s opportunity to complete his education.

¹⁵¹ Recall that the FMLA grants twelve workweeks of maternity leave, halving, if exerted, the breast-feeding period in which the employee will experience the major production of breastmilk.

experienced employees within the company and lower turnover rates¹⁵² were observed along with an overall reduction of parental absence from work and lower health care insurance costs. This conclusions are consistent to relevant studies (Ball and Wright, 1999) assessed the beneficial effects of being breastfed on children's health (i.e., breastfed children tend to exhibit better health condition both in infancy and childhood). For instance, over two years, an insurance company (CIGNA) monitored 343 employees who took part in a lactation support program, and concluded that such program would yield not only an annual savings in health care expenses of \$240,000 but also a 62% reduction in the number of prescriptions and \$60,000 savings in reduced absenteeism rates. Similarly, Google conducted an internal analysis in 2012 on its employees' maternity conditions. It appeared that the company was losing female staff after childbirth — whom would rather quit their jobs than return after their twelve weeks maternity leave. Google hence increased permit's duration from three to five months. The staff's response to such policy was sudden: the attrition rate halved and Google transformed its trial on extended maternity leave into consolidated practice. A wider initiative was launched in 2007 Gillette with the Opt-In Project, gathering over 900 people from different industries (financial and accounting companies, banks and law practices) in the attempt to find effective containment solutions to the high rate of women leaving leadership positions (particularly after pregnancy). Some of the project's suggestions consisted of “*valuing productivity over billable hours, creating no-fault flex time, putting messages on emails coming into and leaving the office system after 7 p.m. on Fridays stating, 'Are you sure you want to send this message or can it wait until Monday morning?', on-site child care*” (Sweeney, 2013).

Of course, cost-effectiveness and returns on investment of such programs may be strictly dependent on the characteristics of the company relatively to its workforce composition. For small firms or business units, the cost of implementing a lactation support program (i.e., a suitable space for breast milk expression, possibly a refrigerator to store the milk and a hospital-grade

¹⁵² Employees are more likely to return to work after childbirth when their employer offers care-giving facilities such as lactation support programs. (retrieved from womenshealth.gov)

electric breast pump, ...) may be greater than the cost associated to a higher turnover rate, or to the settlement of complaints for discriminatory practices. On the other hand, private initiative may be sufficient to lead to the implementation of such programs in bigger companies like Google or in those with a structurally preponderant proportion of employees in need of such kind of facilities.

Federal funding programs could compensate the lack of private initiative on behalf of those businesses that cannot rely on economy of scale advantages. Namely, economic and physiological factors of the business organism and that of its staff members seem to be not only conflicting but also incompatible when it comes to maternity permits and facilities. Employer and employee face specular optimisation problems concerning the cost-revenue tradeoff of the firm, life-work balance, and the maximisation of personal and family wealth. The policy-maker's dilemma thus consists of deciding whether to prioritise demographic and social policies goals or economic growth.

Some emerging trends have highlighted the impossibility to disjoin economic growth from welfare policy goals. For instance, the vast majority of women (either employed or not) chooses to breastfeed¹⁵³ (2005 National Immunisation Survey, CDCP, 2005) — possibly encouraged by recent campaigns ran by privates and public organisation to promote the nutritional and health benefits of breast milk. Also, according to a report of U.S. Bureau of Labor (2005), in 2005 working-mothers were “*the fastest growing segment of the workforce*” in the US, a conspicuous proportion of which had children under the age of three.

Under all reviewed conditions, retirement age thresholds and pensions, minimum wage policy, maternity and caregivers leaves, and other parental benefits and permits, and (the lack of) federal incentives to businesses, do all, at some extent, jeopardise workers' ¹⁵⁴ utility function to optimise. In such a scenario, planned parenthood may turn out to be the only optimiser to the

¹⁵³ According to 2005 National Immunisation Survey, more than 70% of women would choose to breastfeed their newborn (CDCP, 2005)

¹⁵⁴ In this scenario, both employees and employers find themselves in a challenging position, as the US generally lacks of adequate maternity and paternity plans, as it will be discussed in latter sections.

work-life maximisation problem, both under strict rationality and looser common sense decision criteria, at either individual or collective level.

Therefore, the policy-maker's last resort may also lie in planned parenthood programs, rather than any other form of affirmative action (Horn, 2013). As a matter of fact, public opinion seems to lack in enthusiasm about welfare initiatives and affirmative action in particular. This was made apparent by a collection of opinion polls revealing that whites tend to think of affirmative action as "reverse discrimination" means, whereas a survey on over 120 large corporations, had 95% of CEOs agreeing on the crucial importance of the "*use of numerical objectives to track the progress of women and minorities (...) regardless of government requirements*".

In addition, the "discrimination card" is reportedly perceived as an ambiguous tool of electoral campaigning. For example, after the release in 1987 of an advertisement with strong race-discrimination content as part of presidential candidate Bush's campaign, 66% of white males supported Bush in the elections. However, opinion polls showed not only that two thirds of voters would have preferred different candidates had been running for president, but also that over 90% of electors felt that both Republican and Democratic campaigns had not addressed the real issues (Anderson, 2004). Similarly, the focus of 2016 elections was placed on race-and gender-related issues such as immigration and abortion.

Professor Denise M. Horn¹⁵⁵ (2013), argued that the recent wars in the Middle East have explicated the link between "women's empowerment", fertility planning and demographics, military security, and democratisation. For instance, the Arab Spring events commenced in 2010 inspired the uprising of a theory according to which, politically unstable states like Afghanistan, Pakistan, Egypt, Libya and Yemen are more vulnerable because of their demographics characteristics. More into detail, some studies cited by the UNFPA report of 2014 observed that the predominance of young cohorts in a population are often linked with political instability, a weak democracy or dictatorship, higher criminality rates, economic and military insecurity. Hence,

¹⁵⁵ Assistant Professor at the International Affairs Program and Department of Political Science at Northeastern University (2013).

the best course of action for the US in these countries would be to promote family planning policies as catalysers to democratisation and stability.

Reports issued by the Council on Foreign Relations identify American support to foreign family planning programs as a key influential factor on fertility rates in such countries — while strengthening national security (Coleman and Lemmon, 2011). The counterhypothesis of reverse causality between youth and instability is supported by a wider number of demographic analyses, consistently asserting that younger populations are usually observed along with higher mortality and fertility rates — all of which are typical demographic characteristics of developing countries. Additionally, several studies have highlighted the role of education and environmental factors (e.g., cultural changes, urbanisation, access to information) as important covariates of fertility trends and women's empowerment (UNFPA, 2014, 2016). In this perspective, whatever the direction of causality between fertility and education, it is such relation itself that shall be the focus of political efforts.

Women's organisations such as the YWCA, the International Planned Parenthood Federation and the UN Commission on the Status of Women have also enhanced the association between demographic trends — and hence fertility planning — and economic development. Namely, some of the harshest criticisms to the feminist pioneer Margaret Sanger lie in her manipulation of post-WWII political targets to reinforce the thrive to contraceptives legalisation. By 1952 population control (e.g., in developing countries) was appointed by the Population Council headed by J. D. Rockefeller III¹⁵⁶ as a preventive measure to contain — or redirect — the unsustainable exploitation of natural resources. The Senate Committee on Foreign Relations was instructed thereafter by a dedicated committee to promote aid to support population control programs in developing countries as a primary goal to secure national stability.

¹⁵⁶ Born in 1906, since 1929 John Davison Rockefeller III sat on twenty institutional boards in total, among which: the former Rockefeller Institute for Medical Research (Rockefeller University); the former General Education Board (International Education Board); the China Medical Board; the Bureau of Social Hygiene; the Industrial Relations Counsellors; the Council on Foreign Relations; the Foreign Policy Association; the Institute of Pacific Relations; Princeton University.

Such measures were further reinforced by the Commission on Population Growth and the American Future (also headed by Rockefeller) and by the 1972 Rockefeller Commission report, advocating the enactment of the Equal Rights Amendment, the liberalisation of the access to contraception and relevant information, the legalisation of abortion and its inclusion in private and governmental health care coverage. The Nixon administration aligned to such prescriptions, and the combined action of the White House and other relevant organisations led to the issuing of the National Security Study Memorandum 200 of 1974 (NSSM200), a milestone to international population control. Thanks to the US initiative, the attention of international organisations such as the World Bank and the Food for Peace program was redirected towards population control efforts as foreign policy's measures aimed at preserving of domestic stability. Concurrently, international representatives coined the term "family planning" to soften the tempers of population control's propaganda by the use of phrasal referenced to women's empowerment and civil or human rights.

In the meanwhile, the Church responded to such initiatives with the release of the *Humanae Vita* Encyclical in 1968, admonishing the world's leaders about the risks enshrined in birth control propaganda. In particular, the Encyclical presented nefarious prophecies about societies' moral and institutional decadency thereof, juxtaposed to even greater political threat directly imputable to the wide spreading "birth control mentality". Sections 17 and 23 of the encyclical address the Church's concerns about both perspective and ongoing abuses of power exerted by governments through ruthless manipulations of people's fertility, a "*dangerous weapon... in the hands of those public authorities who take no heed of moral exigencies*" (Pope Paul VI, 1968).

Upon President Reagan's Executive Order, the Mexico City Policy underlined that population control as development means of public policy rather than a concern to human or reproductive rights activists. Through a referential comparison to China's one-child policy, the Mexico City Policy presented family planning as a preventive measure to unwanted abortions and a support to women's reproductive rights thereof. On the other hand, such

change in population control's framing and the reference to coercive fertility control caused misled interpretations to arise, further boosted by concurrent regulations such as the Helms amendment of 1973, asserting that "*no foreign assistance funds may be used to pay for the performance of abortion as a method of family planning or to motivate or coerce any person to practice abortions*" (Dreweke, 2016; AGI, 2016).

Conforming to such interpretation, religious representatives have kept warning societies about the threats of birth control, remarking "*the history of the family-planning programs in the Third World is a sobering testimony to this reality. In Third World countries many people undergo sterilisations, unaware of what is happening to them. The forced abortion program in China shows the stark extreme toward which governments will take population programs. Moreover, few people are willing to recognise the growing evidence that many parts of the world do not overpopulate but under populate. (George Weigel: The Cube and the Cathedral)*" (Pope Paul VI, 1968).

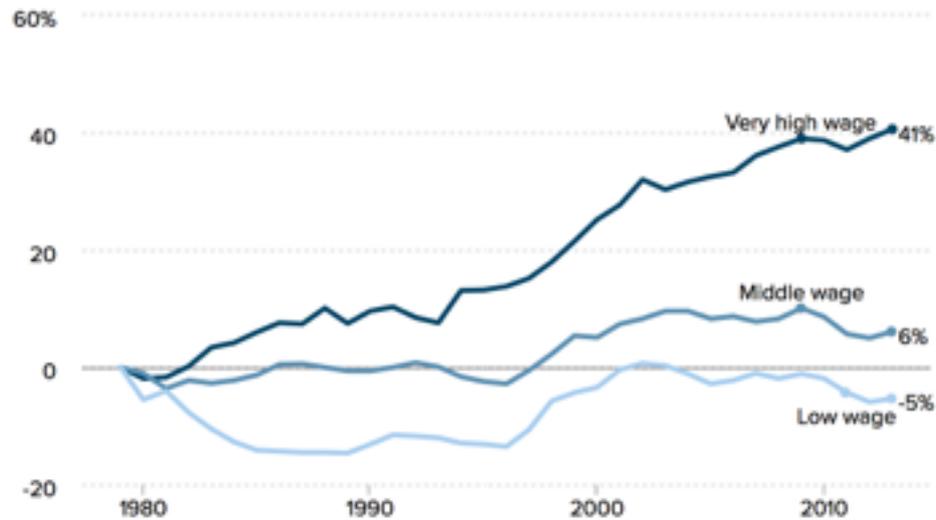
In 1993, the Clinton administration reversed the Mexico City policy framing by attempting to increase aid to the United Nations Population Fund. Yet, it failed to catalyse a shift of family planning policy's interpretation from prescriptions for social or environmental symptomatic instabilities to antibody to socio-economic inequalities. Such a purpose is indeed retrieved by the ACA's mandate on contraception, paired with simultaneous international campaigns to promote (particularly young) women's access to education.

3.2. The ACA's implications onto the labour market

The shift forward of the age at which people enter and retire from the labour market (particularly harsh for women); the age discrimination effects, such as the lengthening of periods of unemployment for workers over 40 years of age transitioning from one job to a new one; the rising of income inequality

(that disproportionately disfavours low- and middle-income workers), are all phenomena that may have warranted the American legislators to reconsider their historical overly prudent attitude towards welfare policies (Harvard TH Chan School of Public Health, 2016). For example, even preceding the Great Recession, the growth rates of salaries in the US were growing disproportionately, depending on income-range (see figure on the next page). Since 1979 median-wage workers' hourly wages (i.e., those between the bottom and top fifty percent salary levels in the US labour market) moved through compensatory oscillations that only led to a 6% increase registered in 2013 (less than 0.2% per year on average), whilst low-wage workers' hourly wages suffered a 5% decrease; much differently, the hourly wage of high-wage workers rose by 41% (Mishel, Gould, Bivens, 2015).

There is plenty of contrasting evidence circa the effect of different types of health insurance coverage onto the labour market. Some papers would argue that more comprehensive or universal health care coverage would be detrimental to the workforce participation and productivity rates (Krueger, 1990; Meyer et al., 1995; Currie and Madrian, 1999; Gruber and Madrian, 2004; Mulligan, 2013), while others would picture diametrically opposite scenarios (Gruber and Madrian, 1994; Currie and Madrian, 1999; Garthwaite, Gross and Notowidigdo, 2014). For instance, Gruber and Madrian (1994) found that the offer of the same health insurance coverage by different companies in the market would discourage the workforce turnover. On the other hand, the same authors (2004) observed a tendency widespread among the workforce to prefer employers offering healthcare coverage. This bias is at the basis of the so-called "job lock" phenomenon, that distorts the optimal allocation of human capital in disproportional favour of companies providing healthcare coverage. Moreover, workers covered by private insurance plans tend to spend longer periods unemployed when passing from one occupation to the next as compared with workers in employer-sponsored plans. Also, the proportion of health benefits tends to lead to proportionally wider periods of leave when it comes to permits for temporary disability or health conditions. However, at the-state-of-the-art, the relationship between healthcare coverage and wages remains obscure (Currie and Madrian, 1999).



Cumulative change in real hourly wages of all workers, by wage percentile,* 1979–2013

* Low wage is 10th percentile, middle wage is 50th percentile, very high wage is 95th percentile.

Source: EPI analysis of Current Population Survey Outgoing Rotation Group micro-data from the CPS survey conducted by the Bureau of the Census for the Bureau of Labor Statistics [machine-readable micro-data file]. Washington, D.C.: U.S. Census Bureau.

Reproduced from Figure F in *Why America's Workers Need Faster Wage Growth—And What We Can Do About It*, by Elise Gould, Economic Policy Institute, 2014

These conflicting results were read by the ACA's advocates as promising signals, supported by statistics presented by governmental agencies on the positive effects of the ACA on both labour market and healthcare (Obama, 2016; Harvard TH Chan School of Public Health, 2016). The hypothesis on the lack of negative influence of the ACA onto the labour market was tested by systematically comparing states that did implement Medicaid expansion versus those that did not just yet. No detrimental effects on employment level were found in expansion states — indeed, President Obama (2016) reports monthly rises in private-sector employment since the ACA's enactment in 2010.

Moreover, a reduction in the uninsured rates has been observed even in those states that did not implement the Medicaid program expansion — to cover more low-income individuals thanks to a combination of financial assistance to the weaker-income-ranges and federal support to the states (The Guttmacher Institute, 2014, 2016; Obama, 2016). These records are likely indicative of a positive influence of the other ACA's reforms on the insurance coverage. For instance, a major contribution was given by the Obamacare's provision allowing residents under 26 years of age to stay on parental plan

coverage — the estimates report a 2.3 million people categorised in such range being covered after to the enforcement this provision in 2010 (Uberoi et al., 2016).

Continuing, the ACA's reform also paved the way to the economy's recovery from the relatively recent ascent of age discrimination and the long-standing battles on gender equality. As a matter of fact, after the pivotal phase of a demographic transition (i.e., once low mortality and fertility rate have been achieved), further behavioural effects consist in the incentive of women to join — and remain in — the workforce as fertility declines, building up family and aggregate savings, also in preparation of expected longer retirement periods, and ultimately, "*investments in human and physical capital, infrastructure and technological innovation*". This "*second demographic dividend*" (Lee and Mason, 2006) largely depends on the political capability to catalyse savings into investments and economic growth (Das Gupta et al., 2014).

A combination of accounting and behavioural effects could be triggered to redirect the economy to benefit from the demographic dividend (Bloom and Canning, 2011). Accounting effects may be brought along by the changing share of working age population entering in or retiring from the labour market after a baby boom (with major implications on savings rates). On the other hand, behavioural components lie in the correlation between a declining fertility rate and the increasing participation of certain blocks of the working-age population in the labour market, although economists and social scientists disagree on the direction of the causal relation between such phenomena (Das Gupta et al., 2014).

Higher life expectancy may incentivise savings, reasoning that people would expect to live — and hence consume — for longer periods of time after retirement. A change in the default retirement plans may therefore be necessary to attenuate the effect of salary stagnation. Namely, "default effect" and quasi-hyperbolic discounting can act as inhibitors to savings, especially in the long run (Harvard TH Chan School of Public Health, 2016). Specifically, "default effect" was theorised and observed in experiments such as the 401(k) plan (Madrian and Shea, 2001), a retirement plan sponsored by employers

under section 401(k) of the US Internal Revenue Code (26 U.S.C. § 401(k)). Subscribers to such program had the options to receive part of their salary either directly or “deferred” into their 401(k) account. The default change consisted in automatically register employees in the 401(k) plan, so that they would have had to follow an opt-out procedure if they wished to get back to their original retirement plan. In the most common scenario, workers were allowed to elect from a wide set of investment options characterised by large tax advantages and mean compensation (Madrian and Shea, 2001).

Before the employee’s subscription to such plans was set as default scheme, the most common attitude of participants was not to enrol, missing out on the benefits of the 401(k) plan. After the change in the standard procedure such passive attitude was reversed: the majority of workers would not opt out, passively taking the program’s tax advantages. Before and after the change in the default retirement plan change, the passive behaviour of the majority of employees was not observed to be due to transaction costs nor to procedural complexity (in both cases, participants to the experiment would be able to opt out the default plan with a phone call).

On the contrary, these tendencies seemed to be largely due to changes in default patterns (80% impact on the treated group and 49% on control). Results obtained in the original experiment were observed to be consistent with that of later studies on different companies and even in medical treatment preferences (Kressel and Chapman, 2007), suggesting such passive participation to default programs may be symptomatic of a generalised tendency to procrastination. These observations are reinforced by those of the quasi-hyperbolic discount model, which assesses a generalised tendency to prioritise imminent rewards (e.g., immediate consumption) at the expenses of delayed ones (e.g., investments or savings, such as for pensions and retirement plans).

As well as the previously stated considerations concerning the statistics on US healthcare quality assessment, the above mentioned reasoning seem to be supportive of the libertarian paternalistic approach proposed by the Obama legislation as the alternative to the libertarian fundamentalism advocated by Republicans and conservatives. As a matter of fact, several studies on both

individual and group behaviour in conditions of bounded rationality, uncertainty and/or ambiguity — or impaired reasoning — may be abducted as favourable evidence to the need of some degree regulative intervention on behalf of the government in those fields relevant to collective interest. Although in sharp contrast with the fundamental reasoning of the American free market, some limitation or interference in private liberties of decision and action may be inevitable when dealing with matters that necessarily require a set of technical information and competences that are far from collectivity's "common knowledge" and "common sense".

All considered, the Obamacare reform ultimately set the basis for a default change in healthcare coverage features (namely, accessibility, affordability and quality of service), shifting the Americans' default mode from un- or under-insured and at the mercy of their own fertility, to adequately insured and capable of efficiently managing their reproductive life.

Chapter 4 ~ Interpretations and perspectives on political implications of fertility planning

Juxtaposed to the religious and ethic concerns reviewed in previous sections, a broad understanding of the American higher institutions and voting system may help to unveil the correlation between population goals and political outcomes in the US. Namely, the central power is broken down into three main branches withholding legislative, executive, and judicial power. Whereas the latter has been detailed in previous sections, the remaining branches will be described hereafter. Albeit not a strictly necessary premises to the continuation of the argument, the understanding of the American voting system may shed light on the ACA's political implications. Latter sections of this chapter will propose some possible interpretations of empirical data presented so far and how it collocates in the American political scenario.

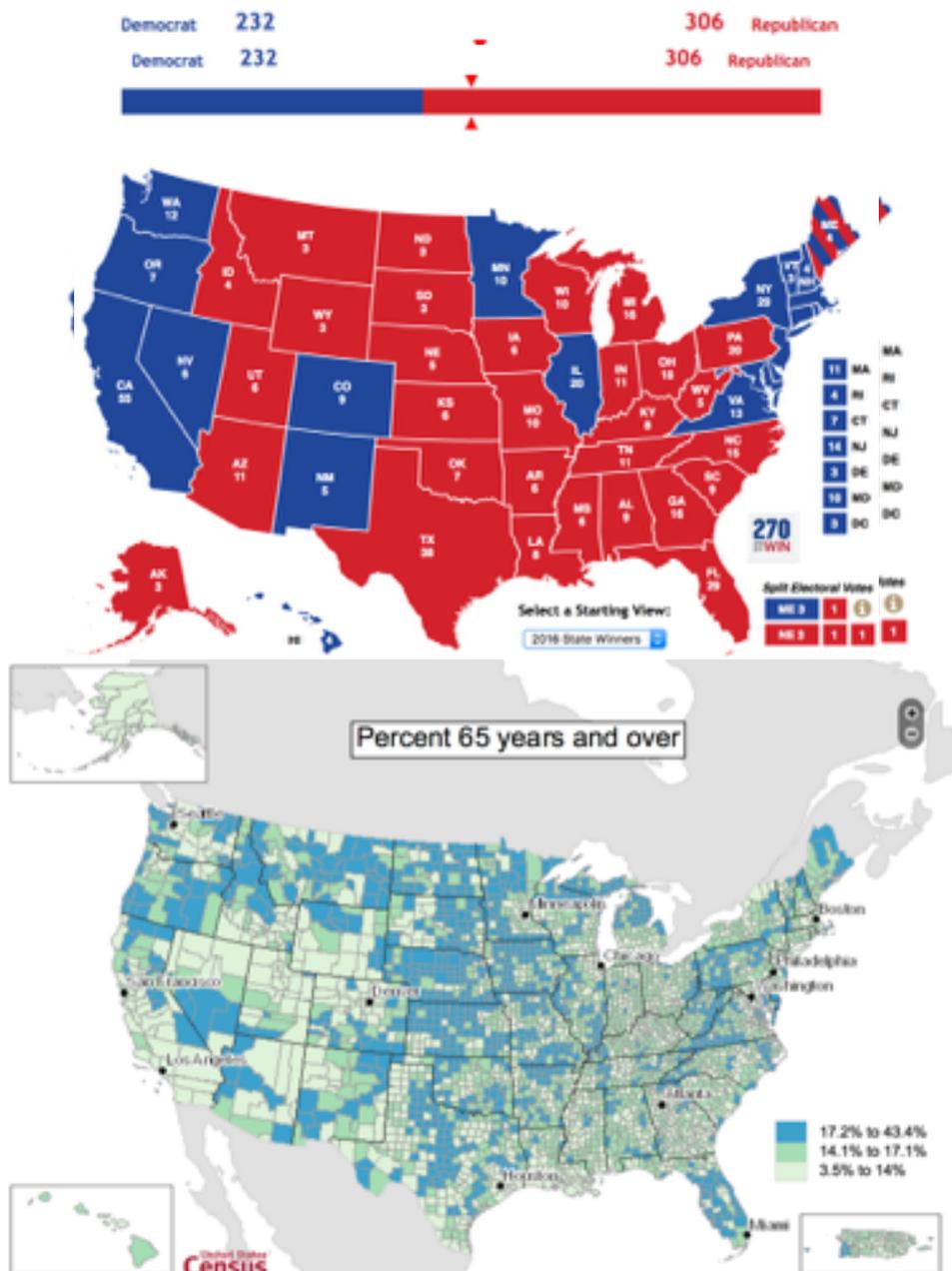
4.1. Legislative and executive power in the American political system

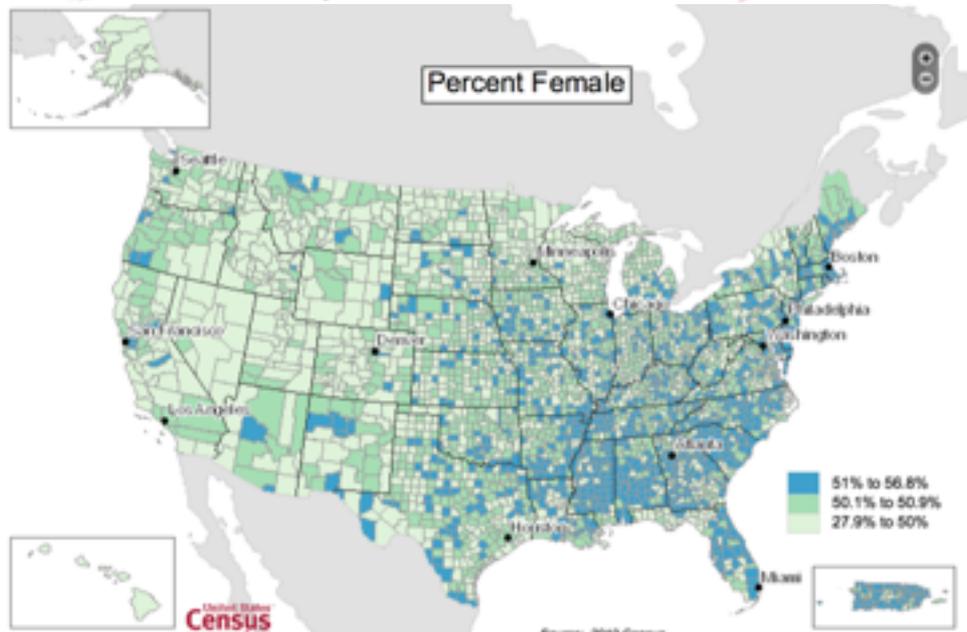
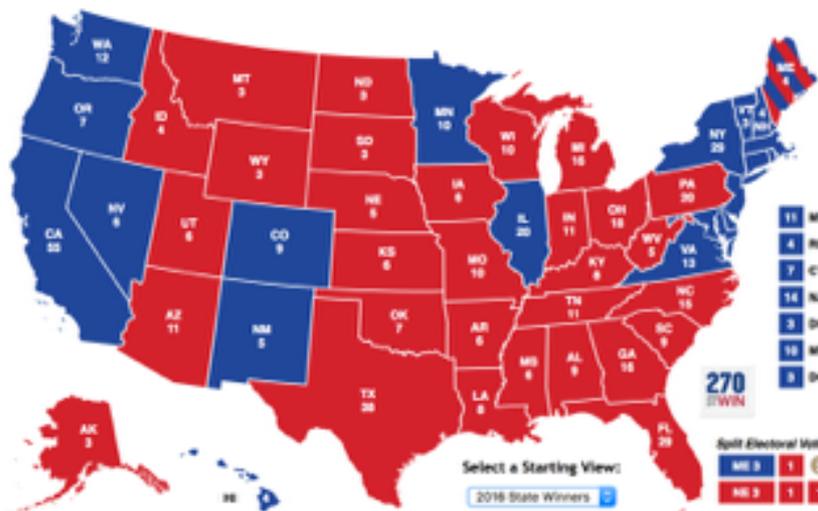
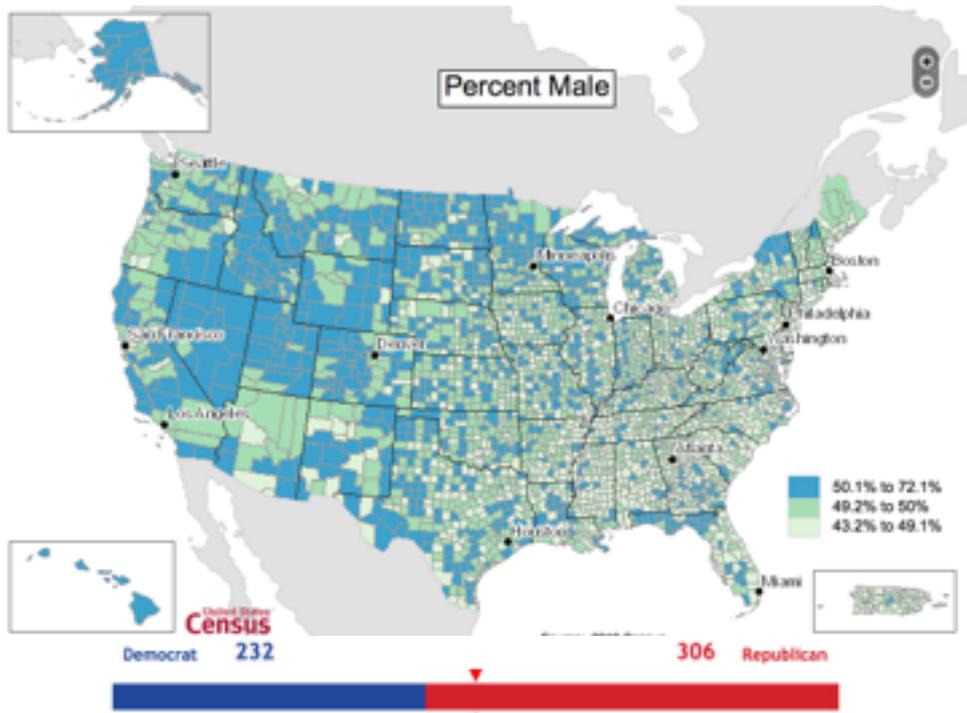
Legislative power is held by the Congress, constituted by the 438 members of the House of Representatives and 100 Senators. Both organs' members are elected with similar mechanisms except for the fact that Senators remain in office for six years (although one third of the Senate stands for re-election every two years). The Congress is in charge of legislating, declaring war, approving the national budget, judges, and justices nominees. Even without any further specification, the link between the Congress' majority orientation and that of the Supreme Court shall be apparent at this point.

Each State is represented by two Senators and a number of Representatives that varies depending on the State's population size, censused every ten years (last available Census dates back to 2010). More into detail, depending on

their population, States are divided into one or more districts, each of which is called to vote for its representative in the House. For instance, Alaska, which is scarcely populated, makes only one district, whereas California, the most populous state, has fifty-three districts. Candidates are awarded a seat in the House of Representatives if they win the majority of votes in each district.

Moreover, representatives stand for re-election every two year, implying that all presidential mandates are expected to incur in a mid-term election, in which the public gets to express its trust (or distrust) in the President in office by electing more representatives from his/her party (or rather from his/her opposition, making it harder for the President and his/her party to get their policies approved by the Congress).





The President and Vice-president of the US head the executive branch, supported by the Cabinet, a group of experts in defence, treasury, and homeland security. Presidential elections occur every four years and can be run no more than twice by the same candidate. President and Vice-president are elected upon personal votes. Although popular vote is casted on election day, it is actually the Electoral College the organ that determines the outcome of the elections. In fact, citizens are called to vote for their representatives in the US Electoral College (according to their State's electoral law), who will eventually give support to one candidate — not necessarily according to the voters' preferences. For example, President G.W. Bush and D.J. Trump won the Electoral College but not popular vote (270towin.com).

More into detail, just like the Congress, the Electoral College consists of 538 members, called electors, who represent the fifty States and Washington D.C. — also the number of electors per State equals that of the State's representatives in the Congress (art. 2, Section 1, Clause 2 of the Constitution), with the exception of Washington D.C., which is assigned three electors — the same as Alaska (under the Twenty-third Amendment of the US Constitution). Each elector is entitled to one vote for the President and one for the Vice-President (Twelfth Amendment, US Constitution).

Since the 1880s, all States besides Maine and Nebraska have followed a “winner-take-all” voting standard, according to which all electors from one State pledge to the presidential candidate who won the most votes in that State on Election Day (Morris, 2010) — however, electors are free to contravene their pledge and vote contrary to the statewide preference. Recalling the above mentioned example, in the 2000 presidential election A. Gore held the numerical majority of votes casted US citizens, having received 540,520 votes more than the Republican opponent G.W. Bush. Gore lost the Electoral College to Bush for 266 to 271 electoral votes, after the pivotal State of Florida (holding 25 electoral votes) was appointed to the Republican candidate by the Supreme Court's ruling¹⁵⁷ (270towin.com).

¹⁵⁷ The winning presidential candidate must have received 270 votes each or more from the Electoral College (i.e., the absolute majority). If the absolute majority cap is not reached, the Congress is called to vote in a contingency election as established by the Twelfth Amendment

To unravel the voting process, electors can be nominated by their State's political party, in party conventions, or by the campaign committee of a presidential candidate, or selected in primaries, depending on the State's electoral standards. After all political parties have selected their strongest candidate to presidency (who in turn chooses a running mate, the candidate Vice-president), the US citizens (including those from the territories) vote in primary elections, in which, the preference for a presidential candidate actually supports the corresponding electors for that State, who will then cast their vote to the presidential candidate on Election Day (<http://www.archives.gov/federal-register/electoral-college/electors.html#selection>). According to the elections results from each State, the candidate who received the majority of votes becomes the party's official nominee to presidency, who will run against the second preferred party's nominee at national level.

At this point, an important specification is to be addressed to the decisional discretion of each State, for which the local parties' leaders are entitled to choose the elections mechanism between primaries or caucuses. Primary elections are the most common voting procedure worldwide, usually prescribing that voters¹⁵⁸ would dispose of one day to reach the polls and exert their political right to vote in anonymity — afterwards, the votes are gathered and counted to produce the election's result. Caucuses, instead, offer no protection to the voters' anonymity. On the contrary, they consist of local assemblies called to gather together in some public venue where electors are supposed to physically take a stand on their preferred candidate's side to express their vote. Any individual vote is only validated if the voter does not leave the assembly before its official dismissal and the outcome is drawn by counting the number of people standing on each candidate's side of the stage.

¹⁵⁸ A further specification regards the differences in the voting standard of each State. Namely, most States adopt a closed primary procedure, which allows to vote only citizens who are registered member of one of a political party. Other States instead adopt a semi-closed standard, which allows independent citizens (that are not members of any political party) to vote on only one primary election. In States adopting open primaries, all citizens can vote regardless their political status.

4.2. Does empirical evidence point to a relation between “Church and State”?

From the population characteristics displayed by the maps below, age and sex seem not to be good predictors of the State’s political orientation. Senior citizens tend to have the highest participation rate to all spheres of political life. However, the distribution of the elderly (see figure below) throughout the country is such that no conclusions can be drawn about their political preferences in the 2016 election at this stage.

As for gender (see figures on previous page), the population of republican states from the south-east has a majority of female residents, whereas man are the larger cohort in the remaining republican states. Although differences in participation rates between genders may explain such a pattern, gender *per se* seems to send contrasting signals about sexes’ political



preferences. Among all various possible scenarios, it could be assumed that women from republican states either did not cast a vote (but that would be mathematically be inconsistent to the participation rates registered on election day) or they valued other parts of the republicans’ political program more than healthcare.

Another possible interpretation is that — at current state — coverage of reproductive health services in these areas is sufficient to make health care a secondary concern for women. This could be the case of Florida and North Carolina (Frost, Zolna and Frohwirth, 2013), that granted to the republicans 29 plus 15 electoral votes respectively. The decreasing rates of unintended pregnancies in almost all Republican states characterised by a majority of

FIGURE 1. Trends in state unintended pregnancy rates, 2002–2006

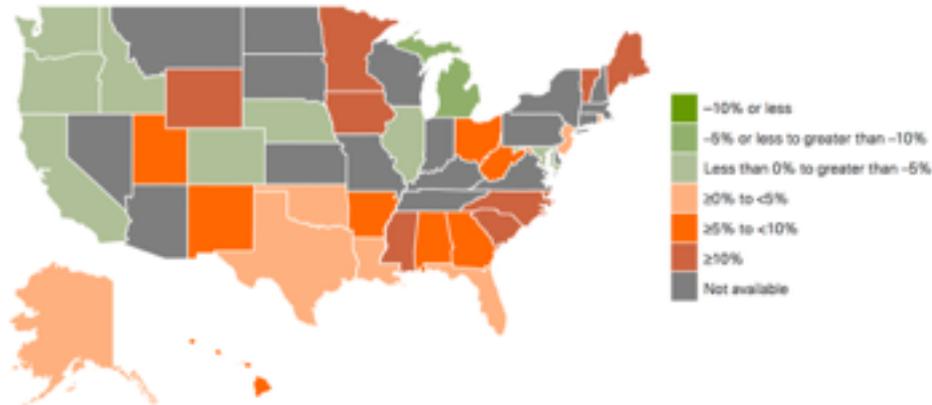
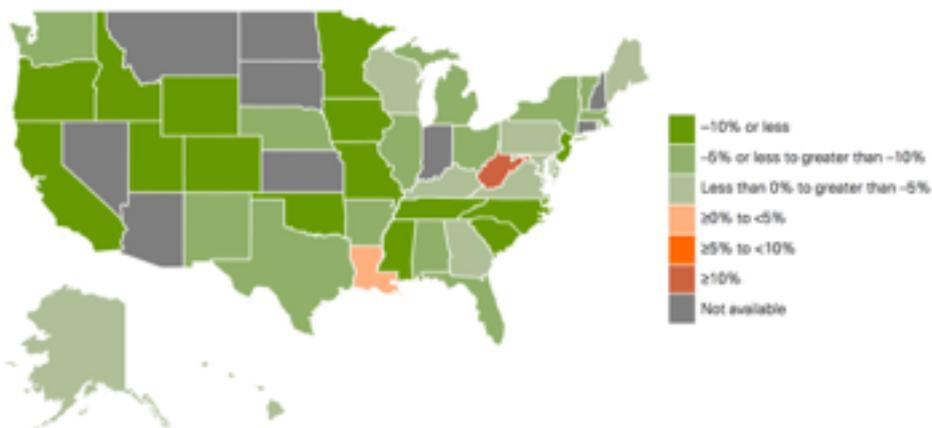


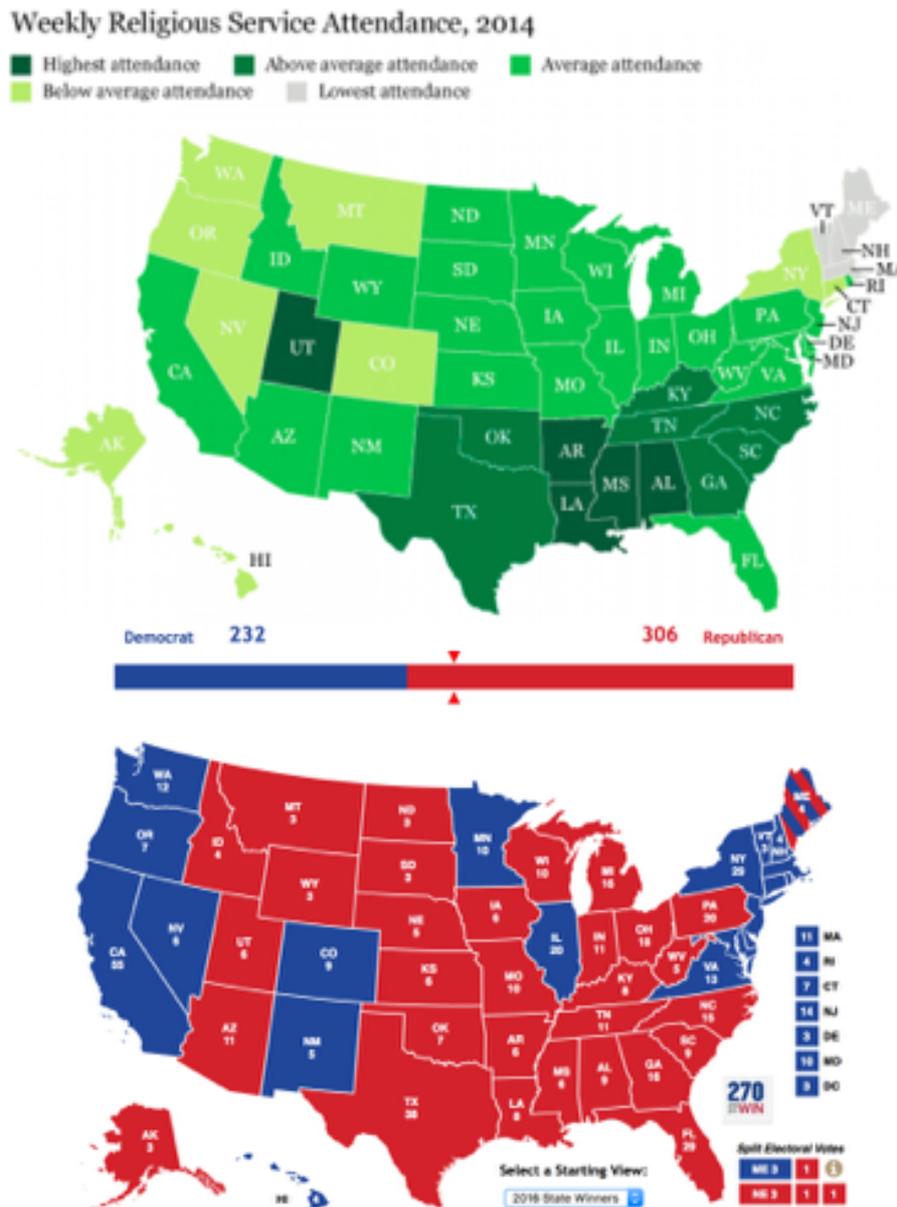
FIGURE 2. Trends in state unintended pregnancy rates, 2006–2010



female population could be regarded as supporting evidence to this assumption (Kost, 2015). Namely, some of these states experienced the steeper decrement of unintended fertility rate from 2002-2006 to 2006-2010. However, the fact that unintended fertility outcomes were decreasing throughout the whole

country would cast doubt on the validity of this kind of approach (see figure on previous page). A comparative analysis of reproductive health coverage in republican states, accounting for female population distribution and participation rates to politics could provide a clearer insight on the matter.

On the other hand, in the light of all observations discussed so far, religion could be a better candidate for forecasting the likelihood of political preferences. Besides the On the other hand, each state that exhibited above



average to highest weekly religious service attendance in 2014 voted for the republican candidate in 2016 elections — with no exception (Gallup, 2015). Most but not all states with weekly religious service attendance from below average to lowest voted for the democratic candidate.

Moreover, survey-based studies recently presented by the Economist (2016) showed that females are more likely to be religious and to be more religious than their male peers — which could cast light on the direction of female voters from the south-eastern counties. Although some hypotheses have been proposed to explain this tendency, none has yet been validated (The Economist, 2016). However, according to the Pew Research Centre, 60% of women would rate religion as “very important” in their life in the US but only 47% of men; the same percentages would claim they pray daily, whereas the gap decreases for those who pray weekly (40% women and 32% men) (Pew Research Center, 2016). Moreover, the gender gap appeared significantly wider for Christians as compared to Muslim males and females (Pew Research Center, 2016).

Further observations can be made concerning specific religious groups (see figures on the right). For instance, all states with significant proportions (from 21% in Virginia, to 43% in Tennessee) of white evangelical protestants (one of the two most numerous religious groups in the US, second to Catholics) besides Virginia and Illinois (hence 15 states from the east and south east) assigned their electoral seats to Republicans. No conclusions can be drawn for Catholics and religiously unaffiliated based on the available information.

In the light of the considerations presented so far and of the data reviewed in previous chapters, signals of the latency of forces other than economic ones driving healthcare policy and decision making have become apparent. For example, based on the evaluation of actual and potential costs and benefits of consumers, producers, and state and federal governments, and given the extent and endurance of opposition to the ACA’s Contraception Mandate, it seems unlikely that its detractors would only be driven by economic reasoning. At corporate level, in fact, a wide set of experimental and theoretical evidence indicates that the benefits of extending coverage for effective birth control would outnumber and outrank the associated costs. Moreover, the composition of the American productive system would support this interpretation, since

large¹⁵⁹ firms could reasonably exert valuable negotiating power with health insurance issuers, while small firms could choose whether or not to offer coverage to their employees — who may purchase plans conveniently from the Marketplace.

The rooted, strong opposition to universal coverage of all contraception would unlikely be explained by economic factors only. Several hints point to ideological components as being preponderant in either individual or aggregate utility optimisation functions — or both.

However, the fact that the Republican candidate openly opposed the ACA's reform may not imply that his supporters are against its mandates or contraception coverage too — they simply may prioritise other points on the Republican program over health care. This interpretation finds supporting evidence in the results of an experimental survey-based pilot study on public policies' representativeness of individual consensus (2016). The data collected from a small sample (n=274 respondents) suggested that American respondents would rather tend to be more sensitive to public issues such as climate change and nutrition, instead of reproductive health.

The experiment was inspired by Asch's conformity experiments (1951) and it was designed to test the effect of in-group information supply as compared to empirical data. The founding assumption is that, when deciding whether or not to support a policy, voters would weigh up the costs and benefits in both qualitative and quantitative terms, and they would also consider peers' opinions — the latter factor constituted the focus of the analysis. As for the theoretical background, it gravitates towards some forms of informational social influence (Deutsch and Gerard, 1955), in particular “compliance” (Kelman, 1958), “conformity” (Asch, 1951, 1955) and “peer pressure” (Stallen et al., 2013).

¹⁵⁹ While the ACA applies to firms with more than 50 full-time employees, the US Small Businesses Administration and the US Census Bureau generally consider as “large” a firm employing more than 500 workers (and satisfies further or different requirements depending on the industry it operates in). In 2008, the US Census information censused a total of 27,281,452 businesses in the United States, of which 21,351,320 operated with no employees other than the business holder. Businesses employing 500 workers or more accounted for 18,586.

In other words, individuals seek (what they perceive as) their peer-group's validation of information they provided (informational social influence, or social proof). This implies that respondents who were initially provided with empirical information about a certain policy — say, contraception coverage extension — and rated their support to it accordingly, are likely to change their initial rating when provided with information from a group of whom they perceive as peers. Even when in-group information goes against the respondents' initial rating, the adjustment would be towards — i.e., in conformity with — the group's rating. In such a case the respondent would either be subject to compliance — i.e., the tendency to agree with a statement because others do so —, or to informational influence — i.e., pieces of information are accepted as reliable evidence because they are being provided by a social group of peers (Kelman, 1958).

As for the case of study, it was presumed that birth control policies would be generally perceived as polarising and charged with ideological content. The effects of informational social influence and compliance were expected to be observed in the form of distortions of respondents' initial rating of the policy presented. Namely, after demographics like sex, age and education were asked, different pieces of information — qualitative (qL), quantitative (qT), and peer-group (PG) — were provided *sequentially* for the respondent to rate five policies addressing polarising topics — namely, global warming, waste recycling, health care, food security, and birth control, in this order. Of these, the first three were control questions, the fourth a filter, and the latter the “treatment”. All questions were structured based the format presented in the figure below; respondents could access to subsequent questions only once they had provided their response at each stage (it was not possible for them to revise precedent ratings, once they had proceeded to the next question) — all respondents were granted strict confidentiality.

The survey were distributed to two groups, one of American citizens only (MTurk workers), the other of various nationalities (distribution via social networks). Demographics of the two samples are presented in the table on the left. Based on the data collected, the null hypothesis is rejected at 15% ($p=0.15$) for sample S1. For the other sample (American Mturk workers), the

Population samples

<p>S1: SOCIAL NETWORK, N=86/174</p> <p>Data collected from 14/3 to 18/3</p> <ul style="list-style-type: none"> ■ Age: 22-29>30-39>18-21 ■ Nationality: Italian>>Australian ■ Ethnicity: Caucasian>Latino, Middle Eastern ■ Occupation: Student>>Employed > Professional ■ Education: College>>Secondary>> Further ■ Gender: M=F ■ Religious Affiliation: Christian, None>>Other <p>2) <u>QUANTITATIVE information</u>– The implementation of the Affordable Care Act would require a tax increase of 5% for all citizens, for an average-sized country. Estimates from US database calculated that for each public dollar invested on birth control policies, US\$ 5.68 are saved in medic aid spending. Based on such information, would you like to adjust your previous rating on the 0-100 scale?</p> <p>3) <u>PEER GROUP information</u>– From affine previous studies at national level, over 51% of respondents rated their support as “moderately opposed” (25-45 on the 0-100 scale) to the extension of free access to birth control to the whole fertile population. Would you like to review your support on the 0-100 scale?</p>	<p>S2: MTURK WORKERS (US), N=86/100</p> <p>Data collected from 18/3 to 21/3</p> <ul style="list-style-type: none"> ■ Age: 30-39 > 22-29,50-65 > 40-49 ■ Ethnicity: Caucasian ■ Occupation: Employed>>Professional > Retired ■ Education: College> Secondary>>Further ■ Gender: M, F ■ Religious Affiliation: Christians>None>>Others <p>and positive social outcomes (such as and the mother,...) are proven to be eyes conducted at national scale have ; of which are due to deficient use of ange of FDA-approved prescription would be granted to all individuals in) is “I completely support”, how likely</p>
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null is rejected with 4% probability (see tables below on changes from mean rating based on quantitative to peer-group information supply). However it cannot be concluded that in-group effect on individual consensus would be

S1: Social Networks	BC Delta	GW Delta	Mturk workers	BC Delta	GW Delta
Mean	9.28	6.87	Mean	2.18	5.28
Variance	379.22	302.42	Variance	48.03	213.39
Observations	86.00	86.00	Observations	67.00	67.00
Pearson Correlation	0.32		Pearson Correlation	0.23	
df	85.00		df	66.00	
t Stat	1.03		t Stat	1.73	
P(Tst) one-tail	0.15		P(Tst) one-tail	0.04	
t Critical one-tail	1.66		t Critical one-tail	1.29	
P(Tst) two-tail	0.30		P(Tst) two-tail	0.09	
t Critical two-tail	1.99		t Critical two-tail	1.67	

stronger for a policy addressing birth control than for another policy with analogous costs and benefits tradeoff. Some weak counter-evidence was provided by data collected from social networks, which could suggest that some demographics may play a role in enhancing or

■ S1: Social Network birth control stats:

Statistic	$\Delta(qL - qT)$	$\Delta(qT - PG)$
Mean	12.14	9.28
Median	3.00	0.50
Std Deviation	19.70	19.36
Variance	388.19	374.81
DD		2.86

retaining in-group effect. Moreover, at the end of the survey, respondents were offered the opportunity to provide an explanation for low rating they assigned to policies they opposed, if any. Within the American sample, only two commented on birth control, whereas the majority commented on global warming (mostly stating they did not believe in climate change).

It is not unlikely that increasing the sample size would lead to different results. However, other factors could level out the effect of social influence. This would be the case of structural characteristics of the experiment, like the presence of anonymity and the lack of immediacy (either physical or temporal proximity) of the respondents to the peer-group of reference, provided by the survey delivery channel. For example, results consistent to those observed in Kelman's experiments (1958) could be obtain upon physical delivery of the survey.

Chapter 5 ~ Perspectives and conclusions from Sentiment Analyses

Data about unintended fertility outcomes is hard to retrieve, because of the several factors that can have a direct or indirect influence. Even when data is made available upon survey studies, the direction of spurious relations between the variables can rarely be identified. Namely, exogenous variables may actually be determined endogenously within the model considered as it appeared to be the case of educational attainments, behavioural risk factors and unintended pregnancies for both men and female populations.

In addition, because of the social stigmas placed on unintended pregnancies and reproductive health in general, survey-based data is likely unreliable even when anonymity of respondents was granted. An example reviewed in previous sections is that of post-realisation of fertility intentions, that may distort one's rating about the intendedness of a pregnancy after childbirth. On the other hand, the binding confidentiality of clinical reports is such that it is almost impossible for non-medical staff to consistently track fertility patterns at individual level.

For these reasons, the more solid results have come from demographic data analyses. These studies did provide some insight about reproductive ongoing patterns at aggregate levels — as for the case of the demographic transition, highlighted by the comparison between mortality and fertility rates (UNFPA, 2014). Yet, the functioning of underlying triggering mechanisms remains at some degree ambiguous or even obscure, often times mainly due to endogeneity (namely, omitted variables) and spurious relations.

In the light of these considerations, an alternative approach, known as opinion mining or sentiment analysis, was used in the attempt to get a grasp on public opinion's *sentiment* on the healthcare reform after the administration change. Because of its versatility, this relatively new technique is becoming an increasingly widespread technique in various fields, from finance to marketing and politics. Its implementation is quite linear in principles: first, the data is retrieved and collected in the form of written samples (i.e., texts, books, text

messages, posts on social media, or even emojis), then it gets processed in such a way that natural language tools of analysis or machine learning algorithms can deduct the “sentiment” of the text or of its parts.

However, the practical development of sentiment analysis algorithms can be quite insidious. Namely, at the state-of-the-art, this type of analytical tools are far from being well-developed and therefore may fall behind the width of the range of application potentials. This is because the analysis of the opinion dynamics requires custom adjustments to the existing instruments depending on the specific topic of interest and the type of data to be retrieved (and further variables like language of the content, programming code, etc.).

The procedure is generally developed through six main steps: 1) data collection; 2) Data pre-processing; 3) Term frequencies; 4) Co-occurrences; 5) Data visualisation; 6) Sentiment analysis. Various coding languages can be used to carry out each step, however, the sequential fashion of some of them would require additional data pre-processing in order to avoid compatibility issues. For example, user-friendly platforms like RapidMiner dispose of built-in operators and packages for retrieving, tokenising, and performing sentiment analysis of tweets (Search Twitter and Aylieen respectively).

Generally, RapidMiner built-in tools work well for scraping live-stream tweets (implying that the time horizon of the data would be limited to the time at which the retrieve is carried out). However, in the phase of retrieving the data there were persistent selection biases (false positives¹⁶⁰), likely due to due to Twitter API's¹⁶¹ characteristics (<https://dev.twitter.com/overview/terms/agreement-and-policy>; <https://dev.twitter.com/rest/public/rate-limiting>). Aylieen package for text mining and sentiment analysis proved inaccurate, producing almost exclusively neutral outcomes. This could be due to the presence in

¹⁶⁰ i.e., tweets containing the search-term but not related to it: e.g., “Vacation Planned” and “Planned Parenthood” both contain the word “Planned”, which can lead to false positives. In unrelated experiments, it was observed that the number of false positives would tend to increase more than proportionally.

¹⁶¹ Application programming interfaces (APIs) are protocols and tools for creating application softwares or integrating components of different programs into one. In particular, it must be considered that APIs can (and are likely to) be “dynamic”, in the sense that they would undergo periodical updates or modifications, that would necessarily require symmetrical changes in the opinion mining script.

tweets of both positive and negative words that would compensate and cancel with one another, ultimately resulting in the neutral rating of the sentiment of the tweet as a whole. The validity of such an explanation becomes likely when built-in tools of sentiment analysis follow the “traditional” approach proposed by Turney (2002, 2001). This means that each token¹⁶² is assigned a Semantic Orientation (SO¹⁶³) value, given by the “distance” of the token and positive and negative reference terms contained in a lexicon list¹⁶⁴, measured as Pointwise Mutual Information (PMI-IR¹⁶⁵). After the computation of the PMI for each term (or pair, or n-tuple of tokens), a positive [negative] value is assigned to those “closer” to positive [negative] lexicon¹⁶⁶.

When this approach is applied on big data, its results can shed light on the mechanisms that generated them. In the case study, for example, various economic, demographic, and financial data would suggest that the ACA’s reform was beneficial for a large share of the American population and it could hence be assumed that the support to such policy would be widespread. On the other hand, the same set of data would lead to puzzling conclusions when it comes to explaining the fierce, enduring opposition to some of the Obamacare provisions that have proven widely beneficial, like the Contraception Mandate.

Continuing, the analysis and — even more — the collection of these types of data is extremely time consuming and requires a considerable amount of resources and effort to be performed, notwithstanding that, more often than not,

¹⁶² i.e., each single word (or, more generally, each element that could also be an emoji or an image, ...) composing the object (a sentence or a tweet) tokenised (split into units) in the data pre-processing phase.

¹⁶³ “*The semantic orientation of a given phrase is calculated by comparing its similarity to a positive reference word (‘excellent’) with its similarity to a negative reference word (‘poor’)*” (Turney, 2002, pp.417-424).

¹⁶⁴ Positive and negative lexicon lists can either be constructed or imported in the script or package used to perform the analysis, whereas neutral terms counting (upon the preliminary exclusion “stop words”, common yet non significant words like adverbs or conjunctions) is computed as the differences between positive and negative terms.

¹⁶⁵ “*PMI-IR uses Pointwise Mutual Information (PMI) and Information Retrieval (IR) to measure the similarity of pairs of words or phrases*” (Turney, 2002, pp.417-424).

¹⁶⁶ The use of different vocabularies will yield different SO values, and therefore different outcomes of the whole analysis. Also, dialectal inflections or slang may likely not be included in in-built lexicon.

even the latest results would already be obsolete at their very release. For instance, this would be the case of employer-sponsored health insurances' in-network dynamics with respect to the ACA's requirement of providing enrollees with a sufficiently wide offer of points of access to medical services. At the moment, relevant agencies have not yet come up with a protocol to supervise the enforcement of this provision, in great part because providers are allowed to change the conformation of the network even after the health insurance plan was sold. In this and similar cases, opinion mining could timely provide the competent surveillance agencies with an insight of the ongoing dynamics and point them to the "right" direction in which further investigation shall be undertaken.

A concerning limit of this approach lies in the frequent use of rhetoric and sarcasm in social networks. This problem is typical of polarising topics like politics and reproduction, whereas it does not constitute too much of a concern in other fields like stock ratings on financial markets. Hence, it is common use for data scientists to manually build a custom lexicon list, in order to adequately weight topic-specific terms and expressions. Also, knowing in advance the composition of the data to be analysed would facilitate its tokenisation in pre-processing phase. For example, Twitter API "Application-only Authentication" (OAuth) would allow for lower rate limiting (determining which tweets can be retrieved and under which conditions it is possible to do so — e.g., time and number of retrieves limits) as compared to The Streaming Twitter API's.

5.1. Sentiment analysis of tweets: #Obamacare

Although the current state of relevant regulations is still unclear at some degree, intellectual property rights laws apply to Twitter API's preventing the

permanent storage of tweets. For this reason, the Streaming Twitter API's was run from h.12:30 PM to 4:50 PM, on February, 22nd, 2017 — results were saved but the 1759 tweets retrieved containing the search-term “#Obamacare” were not, in compliance to the API's terms and conditions (<https://dev.twitter.com/overview/terms/agreement-and-policy>).

The processes ran on the tweets retrieved were: most frequent words counts¹⁶⁷ (see table on the right), co-occurrences (most frequent), most frequent positive [negative] words sentiment orientation. Results are presented in the following tables. The first two processes' results provide little information about the sentiment of Twitter users. However they provide a preliminary insight about the ongoing media “trends” that gravitate towards the topic “#Obamacare”. For example, the high frequency of the word “repeal”, appearing twice (as “repealing”) in a set that also contains words like “senators”, “support”, “opponents”, and “defenders” becomes quite informative. Namely, this raw data can suggest that there is likely some sort of voting process or dispute going on. Moreover, it also tells that most users tweeting about #Obamacare are concerned or interested by such an event.

Most Frequent Words

	FREQUENCY
support	780
obamacare	764
repeal	488
aca	468
show	466
friend	452
list	450
family	446
https://t.co/ncgx2awlf9	440
senator	204
protect	196
people	194
obama	160
popular	124
opponents	120
outspending	120
defenders	120
healthcare	116
repealing	116
pay	116

¹⁶⁷ The aim of the first phase of the analysis is to observe the most common terms or hashtags (topics) used during the time frame of the tweets streaming (and/or download). Redundant but irrelevant elements of the language (called “stop-words”), like punctuation and conjunctions, were eliminated, since they would not convey any accurate insight of the sentiment in further steps of the analysis. NLTK provides a simple list for English stop-words, but it is possible to customise the list manually. The task needs particular attention mainly due to the structure of the tweets itself, containing elements like #hashtags, @-mentions, emoticons, re-tweets (“via” other user), and URLs, some of which are not included in the default stop-words lexicon and could actually be meaningful depending on the context and could hence be examined in a bigram or n-gram.

Additional information can be drawn from the matrix of co-occurring terms

Co-occurrence matrix (frequency count)						
	support	list	show	friend	obamacare	https://t.co/ ncgx2awlf9
obamacare	340		221			
show	228					
friend	221	222	222		221	220
family	221	222	222	222	221	
list	221		222		221	
https://t.co/ ncgx2awlf9	220	220	220		220	

(see table on the left), representing the bi-gram¹⁶⁸ of terms that co-appear in the same tweet more often. This step seem to confirm the validity of the hypothesis

mate in the previous phase: the pair (“obamacare”, “support”) is the most frequently repeated, followed by (“show”, “support”).

At this point, two lists of most frequent (MF) positive and negative words were retrieved (see tables on the right). Because of the algorithm used, it was not possible at this stage to assign a frequency of occurrence. Moreover, it seemed that the built-in tokeniser of NLTK would likely have needed some custom modifications to prevent irrelevant, redundant tokens (like numbers and interjections) to appear in the outcomes. However, some words appeared particularly informative with respect to details over the ongoing issue. For example, the

MFW with Positive SO

MFW with Negative SO

word token	s.o.	word token	s.o.
https://t.co/4oxetziyqi	35.12	looms	-14.97
evidence	23.34	https://t.co/wm4iggr7a9	-14.97
Re-elected	17.89	https://t.co/hz2byu7wzw	-15.23
meetings	17.88	defund	-15.56
ray (Rachel, pro Ocare)	17.56	https://t.co/nwnrkimjdg	-15.56
prosper	17.56	garbage	-15.56
accessible	16.58	freedom	-15.58
beings	16.56	activists	-15.97
affordable	15.88	Liar	-16.23
HSA's	15.73	Politicfact	-16.56
deductible	15.17	charge	-16.56
christopher (Smith, Rep., Sen. Murphy)	14.75	claims	-16.56
https://t.co/X8DJBGPROK	13.87	https://t.co/nWNrKImjdg	-15.56
losers	13.86	cuts	-16.56
JOKE	13.73	analysis	-16.56
premium	13.56	endure	-16.56
https://t.co/mkpfvmpmq	13.56	hc	-16.67
congress	13.55	hall	-17.38
bullet	13.41	fooled	-17.38
state	13.33	https://t.co/SeOf5i4QJ4	-17.56
Limbaugh	13.29	https://t.co/X2SKrxI3X	-17.56
FREE	13.19	implement	-17.56
debt	12.97	coverage	-16.80
https://t.co/aagpxiryqy	12.86	Ryan (Rep. deputy)	-18.21
matt	12.75	Ocare	-19.21
mcdermott	12.75	Shame	-19.36

¹⁶⁸ The “bigram” function from Python’s NLTK built-in package for natural language processing takes a list of tokens and produce a list of tuples using adjacent tokens, bigrams (sider sequences of two terms), or longer n-grams (sequences of n tokens).

names (or surnames) of Republican deputies would generally be assigned middle-range values in the list of tokens with positive sentiment orientation (SO). Contrarily, supporters of the opposite party were assigned middle to low range values.

Particularly revealing insights were given by the links that appeared in the MFW lists, either with positive or negative SO. Some were “retweets” or tweets in response to other users (generally, of deputies whose names also appear in one of the MFW lists, e.g. deputy P. Ryan), whereas others would redirect the reader to a blog page (e.g., the link <https://t.co/AAGPXlrYqy> retrieves the blogpost of a cancer survivor, supporting the Obamacare) or some official website where the news of interest was published.

Further, two lists of the ten words intuitively more closely related to the topic of interest and the revolving dispute were drawn from the MCW with positive and negative SO (see tables below). These terms were then searched

MF Negative words		
word token (neg)	freq. index	S.O.
hc	0.78	-16.67
liar	0.38	-16.23
apartheid	0.54	-24.01
Ocare	0.69	-19.21
Ryan	0.53	-18.21
GOP	0.47	-23.47
Politicfact	0.16	-16.56
defund	0.52	-15.56
activists	0.74	-15.97
Americans	0.82	-32.59

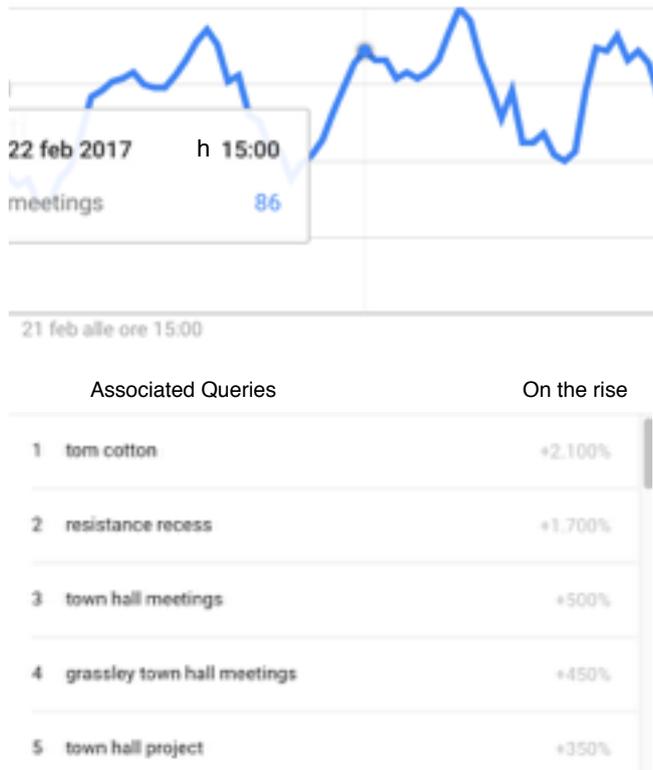
MF Positive words		
word tokens	freq. index	S.O.
Re-elected	0.32	17.89
patient	0.88	9.18
deductible	0.66	15.17
campaign	0.67	12.04
Limbaugh	0.1	13.29
mcdermott	0.47	12.75
premium	0.67	13.56
Trumpcares	0.19	11.02
congress	0.75	13.55
meetings	0.79	17.88

for on Google Trends¹⁶⁹ to check for some hypothetical correspondence between trends on twitter and those on Google Search. In all cases, related queries were showing steep increases in the users’ interest for the topic. For example, the search of the token “meetings”, one of the token with the higher positive SO (17.88), — on Google Trends led to a list of associated queries

¹⁶⁹ Weights were assigned to each token based on the arithmetic average of hourly index values recorded by Google Trends (the interval considered is the same as for tweets scraping 12.30 to 16.50)

about the Town Hall meetings that have recently been taking place at national level. Since no further specification criteria were given to Google Trend search

Searchterm: "meetings" on Google Search — last 7 days. Source: Google Trends



engine, this result was somehow surprising and precise.

Moreover, in this case, the frequency analysis captured the uprising trend registered on Google Search engine, and anticipated the spike of interest observed on the following day. Namely, in most cases, the increasing word frequency estimated by NLTK’s algorithm anticipated mirroring dynamics observed on

Google Trends with a delay of one hour (e.g., “activists”, or “Limbaugh” — see image below) to one day. This may suggest that some causal relation could exist between posts on Twitter and researches on Google. In the limited scenario considered it could be hence assumed that the (time-wise) primary source of information for Twitter users may be tweets from other users (either peers, followers, governmental or press agencies). Based on the limited sample and the un-refined algorithm used for this analysis, no conclusions can be drawn in such sense. Yet, the outcomes presented can suggest that this hypothesis could be tested and may even provide interesting insights.

Conclusions

The of the Obamacare (or ACA health care) reform of the health care system has a peculiar vicinity to welfare. A commonly recognised key feature of the welfare state is its commitment to redirecting market forces towards a more equal redistribution or a more efficient allocation of resources (Ruggie, 1984; Korpi, 1989; Esping-Andersen, 1990; Orloff, 1993). In this perspective, the ACA's primary targets are low- and moderate-income residents, that constituted almost three quarters of the whole uninsured cohort (49 million people) at the time of the law enforcement (Obama, 2016).

On one side, the ACA's core provisions gravitated towards the expansion and the protection of publicly funded programs like Medicaid, Medicare, Contraception Mandate, and Title X (Public Law 91-572, 1970) serving demographic blocks particularly vulnerable to the free market's commodification, such as low-income, elderly, and women. This vision alignes with some economic models (Esping-Andersen, 1990) that extend their focus of analysis onto the effects of welfare policies on decommodification of labour (Orloff, 1993), in the attempt to confine the extent of labour sensitivity to market's fluctuations.

On the other side, the creation of a MarketPlace that enhances competition among insurers and providers aimed at sustaining the reduction of the growth rate of healthcare costs that has long plagued American people and economy. As a matter of fact, the reform stemmed from systematic market failures causing the endurance of inefficient allocative patterns that were found to prevent a homogeneous, sustainable improvement of the Americans' health status (Obama, 2016; Himmelstein et al., 2009). Recent studies have validated the U.S. population's discontent about critical aspects of national healthcare system (Harvard Polls, 2015). For example, the weight of medical expenses was found to be a concerning burden to economic growth potential (UNFPA, 2014). Externalities from the US healthcare system flaws also proved detrimental to subsystems like the labour market, for close, twofold relation between health outcomes and factors like employment status (particularly,

terms and conditions of employment), income range, credit history, and area of residence.

By analogy, the ACA's so-called Contraception Mandate, has aimed at extending coverage of reproductive health services with no cost-sharing to be charged on women. This disposition has encountered fierce opposition from several fronts, from conservative Republican representatives to religious organisation, making claims that the mandate violates some fundamental, constitutional rights — like religious freedom — in the attempt to protect women's ones.

A number of lawsuits (e.g., the consolidate lawsuit *Zubik vs Burwell*, 2016) have delayed the pursuit of a more inclusive and widespread coverage of reproductive health care, yet the Mandate has open the discussion of some (relatively) subtle discriminatory practices affecting various spheres, of women and men's lives, from healthcare to education and labour. This interpretation of the repercussions of reproductive health onto the whole economy is well described by Becker's view (1964) on investments in "health capital" as analogous to those in other "*forms of human capital such as education*" (Currie and Madrian, 1999, Ch.50, p.3311).

Out of theoretical discussions, the importance of policies supporting family planning rests upon the estimated amount of unintended pregnancies — either mistimed or unwanted— accounting for about 50% of all pregnancies in 2015 and continuing a trend that can be traced back to the 1990s with almost unchanged characteristics (Trussell, 2016). Had these not been averted thanks to birth control, they could have resulted in conspicuous social and financial burden (Guttmacher Institute, 2015).

Aside from medical costs, side-effects of unintended fertility outcomes ramify in several fields of the economy, and get amplified by the ongoing demographic transition (seeing diminishing birth and mortality rates, longer life expectancy, and hence the "greying" of the workforce) (UNFPA, 2014). The propagation of the echoes of unintended fertility outcomes throughout the American economic system does not only affect the female blocks, but also have repercussions on the whole population.

At the state-of-the-art, demographics like ethnic origin, age range, education level, and employment status have been observed to correlate with variations in women's likelihood of having unintended pregnancies (i.e., either mistimed or unwanted), as reviewed in the first two Chapters. To recall few examples, the Institute of Medicine (Brown and Eisenberg, 1995) and other researchers (Pamuk and Mosher, 1988; Chandra, 1995; Barber et al., 1999; Taylor and Cabral, 2002; David, 2006; Logan et al., 2007) found consistent evidence that unintended pregnancies resulting in live births correlate with “*elevated risk of adverse social, economic, and health outcomes for the mother and the child*” (Mosher, et al., 2012).

Other studies confirmed the existence of an association between wealth disadvantages and “*higher risk for unintended pregnancy due to risky sexual behaviours, including less vigilant contraceptive use patterns*” (Finer and Zolna, 2011). Moreover, relevant literature's agree on indicating low-income and/or lesser educated women as considerably more likely¹⁷⁰ to experience unintended pregnancies (United Nations Department of Economic and Social Affairs, 2014). Also, low-income and/or low education levels appear more often in minority groups (McKernan et al., 2015) within which, unintended fertility outcomes patterns are persistent over time.

According various eminent sources (the International Federation of Gynaecology and Obstetrics, the European Society of Contraception and Reproductive Health, the Guttmacher Institute, and the Kaiser Family Foundation), high unintended pregnancy rates tend to trigger vicious cycles, that would easily transform into further expenses, in terms of financial and opportunity costs — both for privates and for the government (National Research Council, 1989a,b). Some studies have in fact highlighted how “unhealthy” reproductive dynamics can create a domino effect. For instance, women having unintended pregnancies were found less likely to get consistent prenatal care (Kogan et al., 1994; Pamuk and Mosher, 1988) and more prone to engage in unhealthy behaviours like smoking (DePersio et al., 1994; Kost et al., 1994; Cartwright, 1988; Marsiglio and Mott, 1988; Pamuk and Mosher,

¹⁷⁰ Unintended pregnancies rate for low-income women was found more than five times higher than that of women in the highest income level (Finer, Zolna, 2011).

1988; McCormick et al., 1987; Wells et al., 1987). On the other hand, children born from mistimed or unwanted pregnancies are at higher risk of low birthweight (Kendrick et al., 1990), infant mortality (Meier and McFarlane, 1994) and worse health outcomes in later stages (Baydar and Grady, 1993).

Further important implications of fertility planning can be observed in a wide range of examples within the labour market, as it has been made apparent by the ongoing lawsuits filed by religiously affiliated employers like Hobby Lobby opposing the ACA's "accommodation", because that would still allegedly make the faithful complicit of causing a mortal sin. Moreover, as discussed in detail in chapter 3, there is plenty of contrasting evidence circa the effect of different types of health insurance coverage onto the labour market. Some papers would argue that more comprehensive or universal health care coverage would be detrimental to the workforce participation and productivity rates (Krueger, 1990; Meyer et al., 1995; Currie and Madrian, 1999; Gruber and Madrian, 2004; Mulligan, 2013), while others would picture diametrically opposite scenarios (Gruber and Madrian, 1994; Currie and Madrian, 1999; Garthwaite, Gross and Notowidigdo, 2014). Under various points of view — and especially accounting for discrimination dynamics particularly affecting the growing female cohort of the American workforce — the Obamacare reform may have set the basis for a default change in healthcare coverage features (namely, accessibility, affordability and quality of service), shifting the Americans' default mode from un- or under-insured and at the mercy of their own fertility, to adequately insured and capable of efficiently managing their reproductive life.

In the light of all the evidence and theoretical frameworks reviewed, it can be said that there are various valid approaches to the twofold problem of unintended fertility outcomes. However, in either case it preliminarily needs to be determined whether the categorisation of pregnancies as unintended stems from economic factors (and hence demographics) or from behavioural trends like young generations' lack of interest in having children. The distinction can only be determined based on a more comprehensive and consistent data set. Namely, in the first instance, the current state of research would encourage policy-makers to invest in "nudging" policies other than birth control

promotion or accessibility expansion. In this perspective, the aim would be to properly account for a portion of the officially “unintended” pregnancies as intended (this would be the case of mistimed pregnancies reported as unintended due to one or both parents’ finances). On the other hand, promotion of contraception through means of public health policies would be more effective to prevent unintended pregnancies, rather than changing their categorisation. In the light of these observations, demographics gaps and behavioural factors must preliminarily be analysed in separate models, and then compounded in one comprehensive regression once their weight is fully understood.

Broad evidence strengthens the hypothesis that demographics alone are far from being optimal descriptors of the persistence of unreasonably high rates of unintended pregnancies in several areas worldwide (Das Gupta et al., 2014). For instance, relevant research asserted that reliable pregnancy outcomes are hardly observable due to the unclear effect of non-measurable determinants such as post-rationalisation of pregnancy intentions (Edin and Nelson, 2013; Zabin et al., 1993, 2000). Additionally, recent studies have found significant discrepancies about the reported intentionality of pregnancies between gender groups, which are not fully explained by other demographic characteristics of the sexual partners (Kågesten et al., 2015). An analysis by Kågesten et al. (2015) highlighted the role of males’ use of contraception in determining the likelihood of unintended fertility outcomes depending on relationship status. Namely, the probability of unintended pregnancies tends to peak for three categories of respondents: those men that had changed at least five contraceptive methods, those who had had more than ten sexual partners in their reproductive lifespan, and those in a non-cohabiting relationship at the time of the survey.

Concluding, the costs-benefits analyses reviewed so far have pointed to the existence of some hidden mechanism that cross over rational — or economic — maximisation reasoning. For this reason, the last two chapters proposed and discussed some methodological innovations (sentiment analysis on tweets) that may shed light on the polarising relation between religiosity, reproduction, and welfare. In other words, if health has been already included in consumers’

utility function, it shall be the case that such reasoning would be extended by analogy to religious beliefs as well.

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