

Risk Entitlement: The evolution of the (flawed) National Flood Insurance Program

Stefan Rose

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Abstract:

Flooding has been found to be the costliest (Miller et al., 2008) and most fatal natural disaster worldwide and in the United States (Perry, 2000). Both the magnitude and frequency of floods are expected to increase due to climate change (IPCC 2007, 2012) along with population growth and increased economic assets in coastal zones (Jongman et al., 2012). In order to understand public policy solutions to this growing problem we can examine historical policy solutions and precedents. To mitigate and reduce risk and property damages many governments provide insurance to exposed communities. In the United States, the National Flood Insurance Program (NFIP) holds over 5.1 million policies worth an estimated \$1.3 trillion (FEMA, 2019). Historical precedents established by the United States government before NFIP have influenced many of the prominent criticisms of the modern solution. This analysis will explain the origins, evolution, goals, successes and criticisms associated with the NFIP. Implications and discussion will be included and supplemented with descriptive statistics where relevant.

Introduction

Flooding is eminently regarded as the costliest and most prevalent natural hazard around the world and within the US (Miller et al., 2008; Kousky, 2018). On average, flooding in the United States causes approximately \$7.96 billion in damages per year (NWS, 2018). Over the course of the 20th century, floods accounted for the most lives lost and caused the most property damage (Perry, 2000). Flooding events are caused by or exacerbated by storm systems and sea level rise (Buchanan et al., 2017). The US has seen a domestic increase in population and density in coastal counties. As of 2010, approximately 39% of US residents lived in coastal counties and these counties were found to have population densities six times greater than inland counties (Knowles and Kunreuther, 2014). In the United States 3 of the 5 costliest hurricanes occurred in 2017 (de Koning et al., 2019). There is general consensus in academic literature that flood risk will increase over time with increasing number of economic assets in floodplains, population growth, and increased flooding events from sea-level rise and climate change (Jongman et al., 2012; IPCC, 2012). Understanding adaptation and resilience pathways can include examining how people perceive climate risk and translate this to financial risk, which, should include participation in insurance (Kron, 2005).

Coastal and inland flood insurance in the United States has evolved from the growing need to fill a void largely shunned by private insurance markets (Knowles and Kunreuther, 2014). The National Flood Insurance Program (NFIP) was enacted in 1968 shortly after the first billion-dollar hurricane, Hurricane Betsy, of 1965 (Michel-Kerjan, 2010). Since its inception, the program has had a number of prominent critiques along with some, quieter, successes. This analysis will outline the context of the inception of the program, the evolution and key reforms,

and finally the state of the program and implications for the future. Discussion of the most relevant failings and successes of the NFIP will be included as well.

History of the NFIP

As of 2019, the National Flood Insurance Program insures over 5.1 million policies with approximately \$1.3 trillion worth of assets (FEMA, 2019). The program also has faced immense financial solvency issues and has borrowed an excess of \$40 billion from the US Treasury over the life of the program (Kousky, 2018). To understand the complexities of its current status it is necessary to examine the context of its inception and evolution.

Flood insurance through the private market was largely unavailable from 1927 to 1968 (Michel-Kerjan, 2010). Private insurers were keen to avoid the uncertainty and unpredictability of flood risk where year to year losses hinged on the occurrence of catastrophic hazards materializing. From 1927 through the passing of the National Flood Insurance Act of 1968, Americans faced with flood, or any natural disaster losses, had to rely on the federal government dealing out disaster aid. Academics and policymakers realized the precedent of disaster relief and the creation of *moral hazard* by government absorption of financial risk associated with development in floodplains (Anderson, 1974; McGuire, 2017). Thus, in the 1950s the federal government sought to explore the creation of a sustainable public agency to handle disaster and hazard risk. Both President Truman and President Eisenhower attempted to enact flood insurance programs during their tenure, which failed due to inadequate technical studies (FEMA, 2002). Following a magnitude 9.2 earthquake in Alaska in 1964 and the costliest hurricane ever

previously experienced in 1965, the public and political support was finally ripe for a policy solution.

Gilbert White, a geographer from the University of Chicago, emerged as the dominant figure in flood risk and hazard mitigation (Knowles and Kunreuther, 2014). In 1966, Gilbert White chaired a “Task Force on Federal Flood Policy” responsible for studying flood risk and making policy recommendations to Congress. The task force recommended the improvement of planning and coordination of new developments in floodplains, expanding technical services and methods of floodplain managers, as well as development of a “practical” national program for flood insurance (Knowles and Kunreuther, 2014). Regarding flood insurance, White was adamant in stressing that any manifestation of this nature should offer financial relief but also initiating restrictions of land use and development in floodplains (Knowles and Kunreuther, 2014). Following this task force’s recommendations, the Army Corps of Engineers, with data from the US Geological Survey, released a technical report which was foundational to the adoption of floodplain delineation methods by 26 federal agencies in 1967. These delineation methods created the now ubiquitous terms “100-year flood” and “500-year flood” as the state of the art for assessing flood risk across the country (FEMA, 2002). Finally, in August of 1968, the National Flood Insurance Act was passed which created the Federal Insurance Administration to oversee NFIP within the Department of Housing and Urban Development (Knowles and Kunreuther, 2014).

The program began in 1969 and had, and still has 4 main goals associated with it: 1) identifying and mapping flood risk, 2) encouraging floodplain management and risk reduction, 3) providing flood insurance, and 4) reducing need for and reliance on federal disaster assistance

(Kousky, 2018). A key characteristic of the program was the offering of highly subsidized rates for property owners in identified risky locations. The discounted rates were meant to be contingent on the policy holder willingly following stricter land use regulations and building codes, whereas people moving to floodplains would have to pay risk-based rates (Knowles and Kunreuther, 2014). Therefore, moral hazard would be diminished by shifting risk behaviors through insurance requirements and consequences for non-participation (federal disaster aid eligibility loss) (Anderson, 1974). NFIP started out as voluntary, with policymakers assuming residents in the first participating communities would be eager to sign-up. This was not the case, possibly as a result of years of receiving disaster aid with no contingencies attached so non-participation would seem the superior option (Michel-Kerjan, 2010). Following several years of low market uptake, the policy was amended such that participation was mandatory for property owners in floodplains mapped by the program that were reliant on federally backed mortgages (McGuire, 2017). This change along with the development of a partnership with the private insurance market who could help spread through the program through the “Write-Your-Own” policy helped increase participants from 1.4 million in 1978 to 5.7 million in 2010 (McGuire, 2017).

The NFIP by the Numbers

A primary success of the NFIP is its large strides taken in market penetration and financial independence year over year until the turn of the century (significantly, the program broke even in 1988). After 2004, however, the program has been in a form of freefall. The hurricane season of 2005 (Hurricanes Katrina, Rita, and Wilma) resulted in significant losses paid, an excess of \$17.7 billion (FEMA, 2018). Including the 2005 hurricane season, the 5

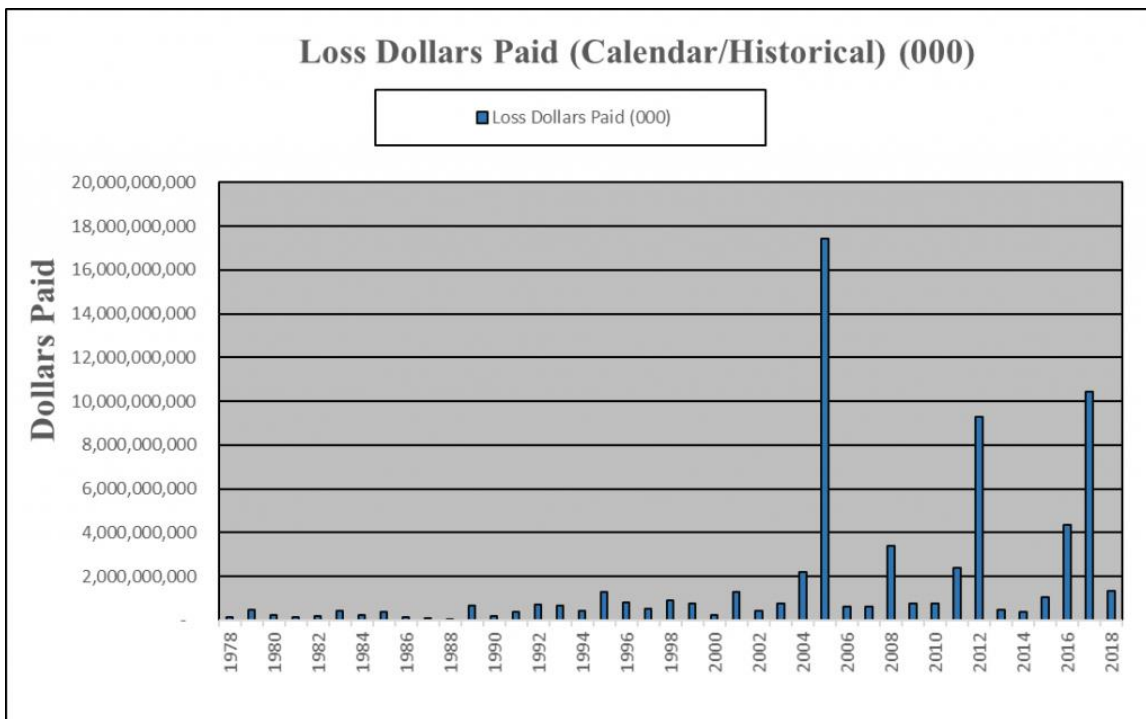


Figure 1 - Dollar amount paid out by the NFIP from 1978 – 2018 (source: FEMA, 2020)

costliest hurricane seasons have all occurred in the last 15 years (see Figure 1). It’s important to understand that the NFIP was never set up to single-handedly manage truly exceptional disaster events. In these instances, the program has the ability and the expectation that it will borrow from the Treasury department (Michel-Kerjan, 2010). The problem emerges when this increasing frequency of borrowing is an unsurmountable burden that hinders claim payment and efficient processing of new claims. From the three costliest flooding seasons (caused by hurricanes) of 2005, 2012, and 2017 the NFIP borrowed an estimated \$33 billion from the Treasury (FEMA, 2019). This resulted in the cancellation of \$16 billion in unpaid claims debt by Congress in 2017 to enable the program to pay its claims obligations to policy holders (Kousky, 2018). As of 2019, the NFIP owes \$20.25 billion to the Treasury department.

Market penetration is a vital aspect of program success for the NFIP. It was an early indicator of the program effectiveness and evaluation (Anderson, 1974; Anderson, 1976). The NFIP saw a steady rise in uptake with the inception of successful awareness campaigns and

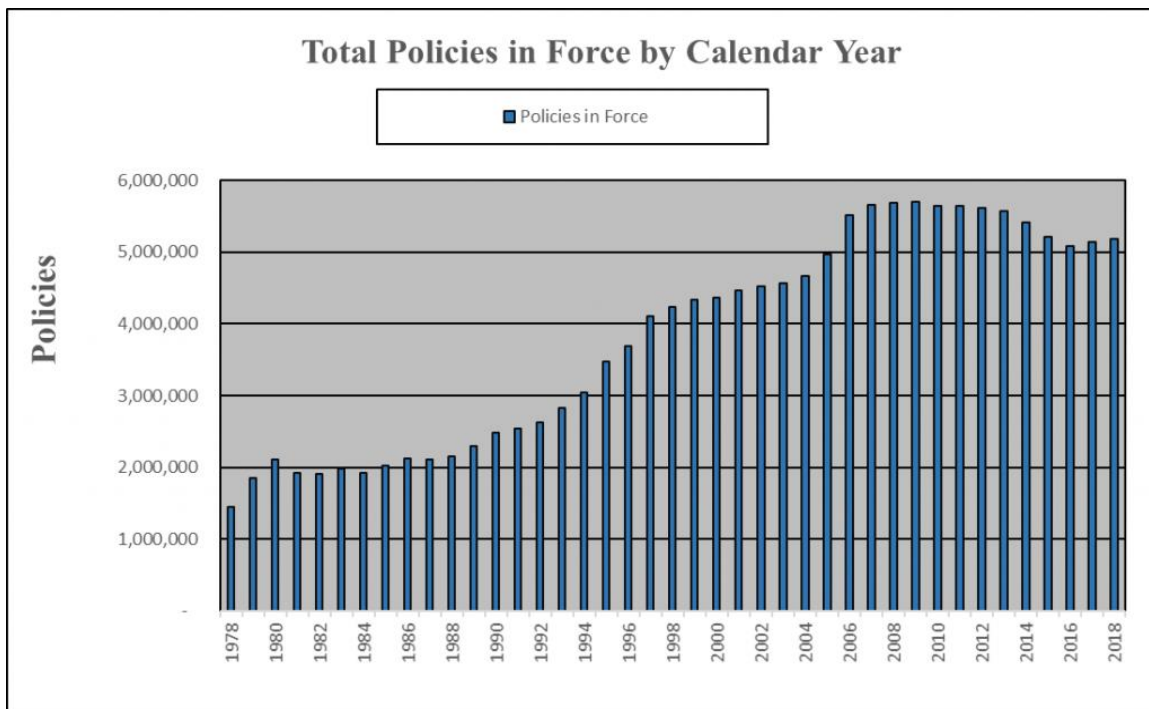


Figure 2 - Total NFIP policies active by year 1978 – 2018 (source: FEMA, 2020)

mandated reforms gave the program more regulatory bite (Michel-Kerjan, 2010). However, this rise in active policies plateaued and declined with 5.7 million policies in 2009 (see figure 2). At its highest point the market penetration of the NFIP was an estimated 4% of eligible population with the majority of all policies (67%) were held in just 5 states (Michel-Kerjan, 2010). Research has shown that the number of new policies surge following disastrous flooding events (Michel-Kerjan et al., 2012). For instance, the number of policies following the unprecedented 2005 hurricane season saw an increase of 14.3% in policies (Michel-Kerjan et al., 2012). Notably it has been found in examining all policies between 2001-2009 that the median tenure of flood insurance policy is between 2-4 years regardless of location in low or high-risk flood zones (Michel-Kerjan et al., 2012). Thus, many residents who are eligible, and indeed mandated to purchase flood insurance if they have a federally backed mortgage, will hold their policies for 2-4 years and then continue uninsured. This failure in consistent participation base is crucial to the financial shortcomings of the program.

Successes and Failures of the NFIP

Since the suburbanization movement following the second world war the allure of moving to the Coast proved to be immensely captivating for many. Florida, for instance, has experienced a population growth boom of coastal amenity seekers with a growth rate of 579 percent from 1950 to 2010 (NOAA, 2013). Flood and disaster risk grew proportionately in locations such as this. The advent of the NFIP is itself a positive development in a reactionary federal public policy to address growing public anxieties about living and investing at the coast. For many this was a major positive step in reinforcing the public right to enjoy the amenity that is the nation's coasts. In financial terms, a primary goal of the NFIP is reducing need and reliance on federal disaster aid. According to FEMA, the NFIP is saving an estimated \$1.87 billion annually in flood losses disaster aid from its floodplain management and regulation (FEMA, 2020). The program is also reported to be bringing in approximately \$4 billion in annual revenues and fees (FEMA, 2020). These annual sums are definite positive steps taken. Additionally, the offered subsidized premiums are intended to be non-prohibitive of living on the coast.

While the NFIP has been an effective instrument in mitigating flood risk and helping Americans live on the coast, there are many areas for improvement. A chief concern and area of improvement for the NFIP is not actuarially reflecting the financial risks associated with living in a floodplain. Academics who pay attention to behavioral economics and risk perceptions note that public perceptions of risk can be signaled by prices (Zeithaml, 1988; Browne and Hoyt, 2000). Insurance premiums are an example of an opportunity for price signaling where higher premiums would reflect the increased risk of living in a hazardous location. Unfortunately, the

precedent established by the federal government prior to the creation of the NFIP caused an entrenched public perception where the risk of disaster was assuaged free of charge. The federal disaster aid acted as a zero-premium insurance (McGuire, 2017). NFIP only slightly improved on this perception with subsidized coastal premiums that did accurately price signal the risks of living on the coast. Another source of systemic failure comes from the political response to natural hazards. Research has shown that voters do not measurably reward or incentivize disaster preparation while they do reward disaster relief (Gasper and Reeves, 2011; Cole et al., 2012). Meanwhile the return on investment is empirically shown to be much higher for disaster preparedness measures rather than acute disaster relief (Healy and Malhotra, 2009).

Another key dilemma of the NFIP stems from the discussion above, low market penetration. Due to entrenched public perceptions of risk in floodplains, even subsidized premiums are held at low rates and normally not held long-term (Michel-Kerjan, 2010; Michel-Kerjan et al., 2012). For instance, a study of residents in very vulnerable locations on barrier islands found that only 49% of houses held NFIP policies even with mandated requirements (Kriesel and Landy, 2004). A major reason for this is the lack of accountability and oversight associated with floodplain management and risk reduction (Knowles and Kunreuther, 2014). Despite mandated purchasing, some banks and mortgage lenders refuse to enforce as they know they are unlikely to be fined or face other negative consequences (Kriesel and Landy, 2004; Michel-Kerjan et al., 2012).

Continued attention to and consistent funding for research and technical studies is imperative to the accurate pricing scheme of the NFIP. NFIP premium pricing is highly

dependent on up-to-date flood insurance rate maps which have been historically underfunded and outdated (Knowles and Kunreuther, 2014). Over years of consecutive losses, the NFIP premiums price schemes have been called into question and at one point, in 2012, were temporarily reformed through the Biggert-Waters Act with overwhelming bipartisan support. Against tremendous public pushback and poignant claims of financial inequity the improved pricing schemes were rolled back with the Homeowner Flood Insurance Affordability Act of 2014 (Kousky and Kunreuther, 2014). A prominent financial issue to be overcome is the repeat loss households. In the current structure the program is unable to decline to insure repeat loss properties (Browne et al., 2019). Strikingly, these repeat loss properties are found to be approximately 1 percent of policies but account for 25-30 percent of all claims (GAO, 2013).

Future of the NFIP

Public perceptions of risk and risk reduction is a substantial barrier to overcome by policymakers. This is enhanced by the precedent of historical policy responses to natural hazards (McGuire, 2017). Thus, any substantial policy reform of the NFIP must gain local political buy-in and raise public awareness of the issues at stake. The program can and must make strides on becoming a more accurate signal for risk through premium pricing.

A number of academic studies have looked at potential solutions to improve the many challenges the program currently faces. A common thread to many is reforming the subsidized rates such that they reflect the risk of living on the coast. Various methods of addressing equity and affordability have been proposed that include means-based vouchers to insurance bonds (Knowles and Kunreuther, 2014; Kousky and Kunreuther, 2014). Increasing market penetration

is vital to the necessary financial reforms that must occur. For properties in identified Special Flood Hazard Areas flood insurance must be regulated with multi-year contracts such that policyholders do not lapse after 2-4 years (Michel-Kerjan, 2010). Reform *requiring* greater investment, with greater agency and financial accountability, for loss prevention on policyholder properties should be an essential objective. Mitigation for floodplain properties could greatly reduce annual claim payouts with increased, and consistent oversight. Finally, having rate information that reflects the increasing risks of the coastal and riverine environments caused by climate change is paramount. Unfortunately, in 2015 an executive order signed by President Obama that was subsequently revoked by President Trump in 2017 mandated just such considerations in all flood risk management (EO 12690, 2015; EO 13807, 2017). Future federal leadership should transcend such partisan acts to improve the successes and the welfare of its constituents and policies.

Conclusion

The future of the United States population's interests in the coast both economically and as an amenity will continue to grow along with the associated risks being heightened by climate change (IPCC, 2012; Jongman et al., 2012). The National Flood Insurance Program was developed in 1968 to help reduce and mitigate risks of living in hazardous locations by providing flood insurance. Currently the NFIP stands with a market penetration of approximately 4% insuring 5.1 million policies and \$1.3 trillion worth of assets (Michel-Kerjan, 2010; FEMA, 2019). The program suffers from many longstanding systemic issues such as subsidized premiums not accurately signaling the risk associated with residing in floodplains and lack of financial solvency. In order to meet future demands and improve its effectiveness as a program the NFIP must ensue financial reforms to subsidized premiums, increase market penetration,

maintain greater oversight of its mandated participation, and account for the increasing risks of climate change in its floodplain management practices. The NFIP will face increased challenges in the future and the onus will be on future local and federal policymakers to transcend these difficulties and sway public perceptions.

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