The cost of coercion: Prospect theory and self-deportation

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Attrition through enforcement (ATE) was developed as a response to large-scale undocumented immigration to the United States over the last three decades. It is a two-pronged approach to regulating undocumented immigration by decreasing the probability of securing employment in the United States while increasing the risk of detention and deportation. Each of these approaches is coercive, relying on increasing the threat of sanction as a consequence of non-compliance with law. Supporters of the doctrine argue that undocumented immigrants, as rational decision makers, will make the decision to self-deport in the face of increasing enforcement pressure, and that sufficient enforcement pressure can be established at low expense. When the systematic departures from rational decision-making described in prospect theory are applied to the migration decision, the expected cost-effectiveness of ATE is lower than in a rational model. This study concludes that where the assumption that undocumented immigrants are rational decision makers is unrealistic, it will generate an overoptimistic assessment of the capacity of coercive immigration policy to produce self-deportation.

Key words: prospect theory, self-deportation, coercion, undocumented immigration

I. Introduction

The United States Congress is currently engaged in intensive discussions of the challenges of undocumented immigration with the goal of developing a comprehensive, unified policy at the national level.[1] The Federal government has not passed comprehensive immigration reform in almost two decades, and efforts to do so over that time have failed consistently.[2] The challenge of developing a coherent national approach to undocumented immigration is exacerbated by the nature of the immigration debate, which has been dominated and the national level by the opposing camps of those who

[1] The Editorial Board, "The Immigration Spring."

[2] Varsanyi, *Taking Local Control*.

argue that people who have come to the country illegally must leave—by force if not by directive—and those who favor accommodating those who have already arrived.[3]

However, this paralysis among policy makers is also a result of the distribution of the costs and benefits of undocumented immigration to the United States; the costs tend to be concentrated to municipalities and states while the benefits are more diffuse.[4] One result of this distribution is the lack of political will at the national level to address the challenges of undocumented immigration, even as concentrated costs mobilize stakeholders who bear those costs to enter into coalitions with those who oppose immigration on cultural and political grounds.[5] Another result of the distribution of costs and benefits of undocumented immigration is the increasing fragmentation of immigration policy in the US, and its devolution from national to state and local policy.[6]

The current study is inspired by the advocacy of attrition through enforcement (ATE), a sub-national policy approach that was implemented in Arizona in 2007 with the Legal Arizona Worker's Act and 2010 with the Support Our Law Enforcement and Safe Neighborhoods Act—better known as SB-1070. Supporters insist on a description of ATE as "rational," and undocumented immigrants as "rational decision makers" who will inevitably make the decision to leave the country in response to the concerted enforcement of immigration laws.[7] Although it is not clear whether those who promote the policy as "rational" do so with rational choice theory in mind, the assumption of rationality on the part of undocumented residents of the United States generates expectations about the effectiveness and efficiency of the policy that may not be satisfied

[3] Borjas, *Heaven's Door*.
[4] Davidson, "Do Illegal Immigrants Actually Hurt the U.S. Economy?".
[5] Ibid.
[6] This fragmentation is explored in depth in Varsanyi, *Taking Local Control*.
[7] Kobach, "Attrition through Enforcement"; Vaughan, *Attrition through Enforcement*.

by the choices human beings, as imperfectly rational decision makers, tend to make. Prospect theory, on the other hand, provides a systematic approach to considering how decision-making in humans departs from rationality, though models and approaches for incorporating its assumptions into empirical analyses of real-world problems are undeveloped.[8] This paper aims to advance and defend a theoretical approach to applying prospect theory to the study of decision-making under coercive pressure from law enforcement, and uses recent immigration policy in Arizona as a test case.

One should note in passing that this approach is of more than theoretical interest as it bears directly on the projected cost-effectiveness of the policy. The central premise of ATE is that the expected costs of undocumented residence in the United States can be raised, and its expected benefits lowered, through an inexpensive application of enforcement pressure, and that undocumented residents will be induced to leave on their own as a result.[9] This assertion is impossible to test at present, since the costs associated with coercive immigration policy – including Arizona's SB-1070 – are not well understood, and the effectiveness of these policies has not yet been tested[10]. In the absence of concrete data on the costs of ATE, it is impossible to comment on the objective amount by which the costs of successful coercion differ in rational and non-rational models. However, comparing these models does generate expectations about the

[8] Berejikian, "Model Building With Prospect Theory."
[9] Kobach, "Attrition through Enforcement."
[10] The fiscal note attached to SB-1070 offered few concrete estimates of its cost, stating repeatedly that the component and overall costs of the bill were impossible to determine in advance (Fiscal Note available at www.azleg.gov/legtext/49leg/2r/fiscal/sb1070.doc.pdf.) Details about the costs of the bill have emerged in a piecemeal fashion since it was adopted, but the costs of training and implementation have not yet been gathered into a single study. In the fiscal year following the passage of SB-1070 a total of $12,004,300 was earmarked for immigration enforcement performed under the auspices of the Gang and Immigration Intelligence Team Enforcement Mission (GIITEM). This figure represents 56.8 percent of the budget of GIITEM, although it is not clear whether these costs stem directly from the adoption of SB-1070 or a broader expansion of immigration enforcement. (Drawn from Arizona's Appropriations Report for FY 2011, available from www.azleg.gov/jlbc/enactedbudgetproposal040910.pdf.

direction in which the assumptions of prospect theory will alter an undocumented person's assessment of the costs and benefits of migration.

II. Background

Undocumented Migration to the United States

The history of immigration to the United States is characterized by intermittent waves of new arrivals, followed by a waxing of restrictionist sentiment among the native-born population.[11] In the last three decades of the twentieth century, the United States witnessed an explosion in the number of new arrivals from Latin America. During this period, 12 million people arrived from Mexico alone, and most of those arrived without documentation.[12] The seeds of this most recent wave of migration were sown in 1942 with the establishment of the Bracero program, by which a cyclical migration of 4.5 million Mexican workers over the life of the program "established the foundations for large scale Mexican immigration to the United States during the 1970s and 1980s" by fostering migration networks and patterns of behavior that persisted even after the program was ended in 1964.[13]

An estimated 1.6 million undocumented immigrants arrived in the United States during the 1980s; that figure was surpassed during the first four years of the 1990s. During that entire decade, between 700,000 and 800,000 people arrived in the United States undocumented every year on average: accounting for the departures, deaths, and

[11] Coutin, "Cultural Logics of Belonging and Movement Transnationalism, Naturalization, and U.S. Immigration Politics."
[12] Passel and Cohn, "Unauthorized Immigrant Population"; Passel, Cohn, and Gonsalez-Barrera, "Net Migration from Mexico Falls to Zero—and Perhaps Less."
[13] Massey and Liang, "The Long-term Consequences of a Temporary Worker Program," 201.

normalizations in legal status of established undocumented residents, the population of undocumented people in the United States grew by an estimated 500,000 per year to a population of 8.4 million in 2000. The rate at which this population grew continued to accelerate through 2005. From the middle of the 1990s to the middle of the following decade, most of the undocumented arrivals to the United States were from Latin America, and 58% of them were from Mexico.[14] The population peaked in 2007 at around 12 million people nationwide, and subsequently declined by approximately 900,000 over the next two years. As of 2011, the number of undocumented people in the United States had been holding steady at just over 11 million for three years.[15]

As the size of the population of undocumented immigrants grew during the 1980s, pressure to address the situation increased. At the national level, the Immigration Reform and Control Act was passed in 1986 as an attempt to "control undocumented migration to the United States and to regularize the status of millions of undocumented migrants already in the country."[16] The act outlawed the employment of undocumented workers but provided for the regularization of citizenship status for undocumented residents who had been in the United States for five years. 1.7 million people attained legal status through the amnesty provisions of IRCA, however, the law failed to produce a significant and long-term impact on the flow of undocumented migrants to the country.[17] The failure of IRCA to curb the influx of undocumented immigrants had political ramifications in

[14] Passel and Cohn, "Unauthorized Immigrant Population."
[15] Passel, Cohn, and Gonsalez-Barrera, "Net Migration from Mexico Falls to Zero—and Perhaps Less."
[16] Massey and Liang, "The Long-term Consequences of a Temporary Worker Program," 199.
[17] Massey and Liang, "The Long-term Consequences of a Temporary Worker Program"; Donato, Durand, and Massey, "Stemming the Tide?".

California, which had historically been the predominant destination for undocumented immigrants to the United States[18].

In 1994, voters in the state passed Proposition 187, a ballot initiative designed to bar undocumented residents of the state from benefiting from publicly provided services, including public education for their children. The law was struck down in *League of United Latin American Citizens v. Wilson*, in a decision that confirmed the plenary authority of the federal government over immigration enforcement.[19] In *League of United Latin American Citizens,* the U.S. District Court for the Central District of California held that "California is powerless to enact its own legislative scheme to regulate immigration ..." or to "regulate alien access to public benefits,"[20] arguing that "[f]ederal power in these areas was always exclusive."[21] In considering the case, the court found that the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRA) preempted the measures put into place through Proposition 187.[22] The grounds upon which the law was invalidated set the stage for future challenges to local legislative efforts to control immigration. However, the outcome of *LULAC v. Wilson* also sharpened the template for subsequent immigration policy at the state and local level, which has been crafted to carefully avoid trespassing on federal enforcement prerogatives.[23]

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[18] Coutin, "Cultural Logics of Belonging and Movement Transnationalism, Naturalization, and U.S. Immigration Politics."
[19] Varsanyi, *Taking Local Control*.
[20] McDonnell, "Prop. 187 Found Unconstitutional by Federal Judge."
[21] League of United Latin American Citizens v. Wilson, 997 F. Supp. 1244 (Dist. Court, CD California 1997).
[22] Varsanyi, *Taking Local Control*; League of United Latin American Citizens v. Wilson, 997 F. Supp. 1244 (C.D. Cal. 1997).
[23] Campbell, *The Road to S.B. 1070*.

The same year that the PRA was passed, Congress passed the Illegal Immigration and Immigrant Responsibility Act (IIRAIRA). This law increased the scope for local enforcement of federal immigration policy through §287(g), which granted local and state law enforcement power to enforce federal immigration law.[24] Local law enforcement agencies did not avail themselves of this new power until 2002—reflecting a shift in the policy context around immigration, which became foremost a question of national security after the attacks of September 11, 2001 on New York and Washington by al Qaeda.[25] In the year following the attacks, a classified memo from Attorney General John Ashcroft affirmed the right of state and local law enforcement to participate in federal immigration enforcement, reversing the position of former Attorney General Janet Reno.[26]

As of December 31, 2012, thirty-nine agencies in nineteen states had signed memoranda of understanding with the US Immigrations and Customs Enforcement (ICE), the government entity charged with enforcing federal immigration laws "as part of its homeland security mission.[27] These memoranda have become the basis for increased enforcement efforts at the state and local level.[28] However, recent legislation – beginning with SB-1070 – has sought expand the role of state and local officials by taking advantage of their authority to "communicate with the [Federal Government] regarding the immigration status of any individual, including reporting knowledge that a particular

[24] Ibid.; Varsanyi, *Taking Local Control*.
[25] Miller, "Blurring the Boundaries Between Immigration and Crime Control after September 11th"; Emblematic of this shift was the termination of the Immigration and Naturalization Service, and the assumption of its former duties by the newly created Department of Homeland Security. See also Varsanyi, *Taking Local Control*.
[26] Varsanyi, *Taking Local Control*.
[27] "Fact Sheet: Delegation of Immigration Authority Section 287(g) Immigration and Nationality Act."
[28] Varsanyi, *Taking Local Control*; Campbell, *The Road to S.B. 1070*.

alien is not lawfully present in the United States."[29] The increased participation of sub-national entities in immigration enforcement is a centerpiece of attrition through enforcement, a policy doctrine implemented in Arizona and five other states since 2010.[30]

ATE in Arizona

The overarching policy aim of ATE is to deter new immigration and encourage current undocumented residents to self-deport. Kris Kobach, who has been instrumental in the implementation of ATE at state and local levels, holds that "[i]llegal aliens are rational decision makers. If the risks of detention or involuntary removal go up, and the probability of being able to obtain unauthorized employment goes down, then at some point, the only rational decision is to return home."[31] Here, Kobach illustrates the two-pronged nature of ATE: the first prong—which consists of increasing the risk of involuntary removal—was implemented in SB-1070 and codified under ARS 11-1051.

The relevant portion of SB-1070 is §2(B), which mandates that "[f]or any lawful contact made by a law enforcement official or agency of this state or a county, city, town or other political subdivision of this state where reasonable suspicion exists that the person is an alien who is unlawfully present in the United States, a reasonable attempt shall be made, when practicable, to determine the immigration status of the person."[32] This section became the focal point of a national debate around the law and the potential negative impacts on the Hispanic/Latino population of Arizona before and after the law was passed. The principle point of contention has been the law's inclusion of "reasonable

[29] Arizona v. U.S., 132 S.Ct. 2492 (2012).
[30] Lacayo, "One Year Later."
[31] Kobach, "Attrition through Enforcement," 156.
[32] Biggs, *Support Our Law Enforcement and Safe Neighborhoods Act*.

suspicion" as a trigger for verification of a person's citizenship status. The law is silent on what circumstances or considerations should be deemed to generate reasonable suspicion, and critics argue that this introduces leeway for local and state police officers to target the Hispanic/Latino population with increased scrutiny through racial profiling.[33]

In spite of the prominence of racial profiling in the national debate, the Department of Justice chose to focus on the doctrine of preemption when it challenged the law in *United States v. Arizona*. In its ruling, the Supreme Court struck down three of the four measures under consideration, but found that §2(B) was not preempted as written, and that the issue of whether it would intrude on federal prerogatives as interpreted and enforced by Arizona authorities was not yet ripe for consideration.[34] In targeting the undocumented population directly, SB-1070 supplemented 2007's Legal Arizona Workers Act (LAWA), which is designed to serve the second prong of ATE by lowering the probability that undocumented workers will be able to secure employment.[35] LAWA aims to implement this second prong by requiring that all public and private employers in the state verify new hires with E-Verify, a web-based tool that relays information submitted by prospective hires to demonstrate their eligibility for employment to the Social Security Administration and the US Citizenship and Immigration Service.[36]

It remains an open question whether or not LAWA and SB-1070 have succeeded in making undocumented people self-deport. Kobach has cited anecdotal evidence to the

[33] Campbell, *The Road to S.B. 1070*; Nill, "Latinos and S.B. 1070."
[34] Arizona v. U.S., 132 S.Ct. 2492 (2012).
[35] Kobach, "Attrition through Enforcement."
[36] Archibold, "Arizona Is Split Over Hard Line on Immigrants"; Lofstrom, Bohn, and Raphael, *Lessons from the 2007 Legal Arizona Workers Act*; Varsanyi, *Taking Local Control*.

effect that the E-Verify mandate had led to the sudden departure of thousands of undocumented immigrants from Arizona before the law was even implemented in January of 2008.[37] Rosenblum and Gorman support the conclusion that LAWA reduced the undocumented population in Arizona while pointing out that such evidence reveals that it has not only been migrants, but also businesses, that are leaving Arizona "in search of a more friendly environment."[38] A recent report published by the Public Policy Institute of California attributed the departure of approximately 92,000 undocumented residents of Arizona after 2007 to LAWA.[39] There have been no studies of which the author is aware that rigorously examine the effectiveness of SB-1070. A frequently cited research paper released by the Mexican bank BBVA Bancomer claims that there were 100,000 fewer Hispanic people in Arizona at the end of 2010 than there were at the beginning of that year. However, the conclusion that SB-1070 was responsible was treated as speculative in the paper, and the departures were also attributed to ordinary market effects.[40]

Bracketing Ethics

One of the motivations behind this analysis is the consideration that coercive immigration policies are morally distinct from non-coercive policies. This is not because

[37] Kobach, "Attrition through Enforcement."
[38] Varsanyi, *Taking Local Control*, 128. There is further anecdotal evidence that businesses are *avoiding* Arizona for the same reason.
[39] Lofstrom, Bohn, and Raphael, *Lessons from the 2007 Legal Arizona Workers Act*. The task of assessing the effects of LAWA is complicated by a need to control for drastic changes to the labor market in Arizona and the rest of the United States due to the economic recession that began in 2007. Lofstrom et al. accounts for the impact of the recession through the use of a synthetic control method in which the changes to the undocumented population in Arizona are compared to the average changes of a group of states, whose impact on the model are weighted based on their comparability to Arizona's labor market before LAWA and the recession.
[40] "Study"; "After SB1070"; *Mexico Migration Outlook*.

coercion is immoral *per se*, but rather because its operation necessarily entails a forceful limitation on the freedom of the party that is subject to coercive pressure. For 17th century philosopher Immanuel Kant, justification of coercion turns in part on settling the conflict between "competing freedoms"; freedom may be abridged where it is used to assert claims to title that an agent has no right to assert.[41]

In a case in which an agent asserts title to the property of another, he interferes with the rights of that other to direct his property to his own ends. Since the victim is entitled to his property, he is entitled to compel the thief to return his property, or to deter the thief from obtaining it in the first place. The rights of a state to employ coercive tactics against the thief (through coercion) derives from the transfer of rights from the individual to the state to assert title to property: in accordance with the social contract under which those rights were transferred to the state, the state asserts title to an individual's property on behalf of that individual.[42] Under a "rights" conception of coercion, ATE is justified on the grounds that the presence of undocumented immigrants in the United States is the type of trespass upon the rights of Americans to set their own ends with their property that can be justly remedied through the application of coercive pressure to the population of undocumented immigrants.

However, where behavioral scientist Murray Sidman objects to coercive policy he does so on grounds that reflect concerns with the potential for negative side effects to overwhelm the positive effects of the policy, a position that is closer to utilitarianism than the deontology of Kant.[43] Arguing against the use of coercive tactics in the classroom, he cites the potential for such tactics to produce long-term behaviors ("dropping out" or

[41] Ripstein, "Authority and Coercion."
[42] Ibid.
[43] Sidman, *Coercion and Its Fallout*.

"tuning out") that are contrary to the interests ostensibly served by the short-term application of the policy.[44] An example of such a situation might be one in which a teacher places a child in time out for misbehavior, which is done to compel the child to pay attention in the future. Where repeated instances of time out lead the child to withdraw his attention over the long term, the ultimate impact is negative.[45] Similarly, where policy is made to compel undocumented immigrants to leave on the grounds that they impose a cost on the state that is not recovered through taxation, such policy fails where it has the effect of pushing undocumented workers off company payrolls and into the informal sector.[46] Of more concern in this paper is the potential that coercive immigration policy could fail to produce its promised effects (self-deportation) while worsening the condition in which undocumented residents of Arizona live. This is not to say that the policy is justifiable to the degree that it succeeds in producing those effects, but rather to argue that it is certainly unjustified where it fails to do so, amounting to little more than punishment for its own sake.

IV. Literature Review

The current study is situated within a theoretical framework that emphasizes individual agency in the migration decision. Early theories of migration took the individual as the unit of analysis and posited that migration could be explained as the end result of a rational analysis of its costs and benefits. The theoretical framework in this paper updates the cost-benefit model by incorporating *loss aversion*, *framing*, and the

[44] Ibid.; McCord, *Coercion and Punishment in Long-Term Perspectives*.
[45] Sidman, *Coercion and Its Fallout*. For more on the long-term impacts of coercion, see McCord, *Coercion and Punishment in Long-Term Perspectives*.
[46] Varsanyi, *Taking Local Control*, 129. There is anecdotal evidence that "unauthorized workers have responded to LAWA by shifting to the underground economy, depriving the state of tax revenue."

possibility and *certainty effects* – cognitive biases that are known to produce systematic departures from rationality in decision-making. The incorporation of these biases may be considered a strength where the updated model of costs and benefits has greater explanatory power.

However, the choice to adopt an agency-frame approach to analyzing the migration decision may be limiting where an alternate framework would better capture the forces that influence migration. Researchers who argue that an appeal to individual agency is inadequate to explain the migration decision champion a structural approach. Typical of this approach are the Dual Labor Market Theory, which posits that permanent demand for immigrant labor is a structural feature of developed economies, and the World Systems Theory, which posits that the "penetration of capitalist economic relations into peripheral, non-capitalist societies creates a mobile population that is prone to migrate abroad.[47] The analysis here confines itself to an agency-frame approach because the policy on which it comments—attrition through enforcement—is situated within that frame.[48] The limitations associated with confining the analysis in this way will be discussed in the "Limitations" section below.

Coercion

Coercion, as a strategy of behavioral control, is accomplished through the use of punishment or the threat of punishment.[49] Philosopher Timo Airaksinen conceives of

[47] Massey et al., "Theories of International Migration."
[48] Ibid.; Kobach, "Attrition through Enforcement." Massey holds that enforcement-based policies are developed within the agency frame, and Kobach's continual invocation of the "illegal alien" as "rational decision maker" is further evidence that he considers the policy to operate upon the undocumented individual's understanding of the costs and benefits of migration.
[49] Sidman, *Coercion and Its Fallout*. To these two Sidman adds negative reinforcement, which is reinforcement through the removal of a negative stimulus or circumstance. The scope of this paper

coercion as an "interaction between two rational agents by which the dominant agent profits and by which the subordinate agent loses regardless of what he decides to do. . . . When A coerces B this means that B faces two unattractive alternatives. A wants him to choose the less unattractive action."[50]

Omitting the distinction between dominant and subordinate agents—a distinction which will not be useful here—Airaksinen's account accords with the behavioral conception of coercion as a decision situation in which none of the potential outcomes are reinforcing.[51] The creation of this situation requires either the application of force or the threat of its use. The direct application of force corresponds to Bayles' account of "occurrent" coercion, which will be omitted from consideration in the analysis, even though the forcible deportation of a person beyond the border certainly qualifies as an exercise of this type of coercive control.[52] The reason for the omission is that this paper is confined strictly to the consideration of "self-deportation" as a policy goal. The achievement of this goal relies on the threat of sanction, which is consistent with Bayles' description of "dispositional" coercion, and it is this form with which this analysis will be concerned.[53] In SB-1070, the components of dispositional coercion are the sanctions threatened by enforcement authorities – detention, fines, and deportation – and the measures undertaken to impact undocumented persons' assessment of the probability of experiencing those sanctions.[54]

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precludes consideration of negative reinforcement as a determinant of migration in response to coercive ATE. However, to the extent that the purpose of ATE is, as Barack Obama charged, to "[make] life so miserable on folks that they'll leave," negative reinforcement should be integrated into future analysis of the doctrine and its effects (see "Transcript of the Second Presidential Debate in Hempstead, N.Y.").

[50] Airaksinen, "An Analysis of Coercion," 214.

[51] Sidman, *Coercion and Its Fallout*.

[52] Gunderson, "Threats and Coercion."

[53] Ibid.

[54] Kobach, "Attrition through Enforcement."

Dispositional coercion admits of the possibility of defiance; an agent who intends to coerce another militates against defiance through the threat of sanctions. Among the conditions which must be satisfied for a threat to be successful are that (1) a coercer must make it clear to his adversary that the threatened punishment is contingent upon a specific demand for action or inaction, (2) the adversary does not wish to suffer that punishment, nor to comply with the coercer's demand, and (3) the adversary does not believe that he or she can avoid compliance without suffering the promised punishment.[55]

In considering the case of coercive ATE, the first two conditions are easily established: that detention and deportation are possible outcomes facing violators of American immigration law is understood, and it is safely assumed that this is an outcome that violators of immigration law would prefer to avoid. However, (3) requires further discussion because it bears directly upon the costs of implementing ATE. The following section explains the process by which an adversary is convinced of the impossibility of defying a coercer's demand while avoiding sanction as it is represented in expected utility theory.[56]

Expected Utility Theory and Coercion: Deterrence and Compellence

The basic model of expected utility is one in which potential outcomes are considered as expected benefits, minus the costs of seeking those benefits and weighted by the probability of obtaining them. This is represented symbolically as $EV = p \times (B - C)$, where EV = expected value, B = the total value of the benefits, C = the costs of seeking those benefits, and p = the probability of securing the benefits, net costs. Assuming a

[55] Gunderson, "Threats and Coercion."
[56] Gary Schaub illustrated the difference between expected utility and prospect theoretical models of coercion in a 2004 paper published by the International Society of Political Psychology. His line of analysis is closely followed in this study, and his symbolic representations of the coercion decision are presented here, unchanged except where noted.

decision environment in which an agent is faced with the binary choice of compliance or non-compliance, one can posit a model of decision-making faced with a coercive demand that is expressible as $EV1 \quad = EV^2 + EV^3$, where EV^1 represents the expected value of compliance, and the expected values of successful and unsuccessful attempts at defiance are represented by EV^2 and EV^3, respectively. The expected value of compliance is set by the terms of the coercer's demand, but it also depends on whether or not the demand is compellent or deterrent. The principle difference between these two demands is that in the former case, the decision-maker owns the stakes that are the subject of the coercive demand while in the latter case he or she is seeking ownership of those stakes. More colloquially, compellent demands are demands to "do something" or "give up something" and deterrent demands are demands "not to do something" or "not to seek something[57]."

One of the implications of a coercion model founded upon expected utility theory is that the threat probabilities theoretically required to produce compliance are, *ceteris paribus*, equal in cases of deterrence and compliance[58]. This point can be illustrated through the symbolic representation a coercive demand, the assumption of monetary values for stakes and sanctions, and the solution of the resulting formulae. Recall that a decision-maker under coercive pressure is assumed to be considering his or her choice with reference to the expected values of compliance and non-compliance ($EV^1 = EV^2 + EV^3$). In considering the expected value of compliance (EV^1), the decision-maker is considering giving up his or her claim to the stakes in dispute; an outcome represented as $-S$. Defiance is an attempt to assert a claim to those stakes, and can either be successful

[57] Schaub, "Deterrence, Compellence, and Prospect Theory."
[58] Berejikian, "Model Building With Prospect Theory"; Schaub, "Deterrence, Compellence, and Prospect Theory."

or unsuccessful. The expected value of successful defiance is $(1 - P_t) \times S$ and the expected value of unsuccessful defiance is $P_t \times (-S - R)$, where P_t represents the probability that a coercer will carry through on his or her threat and inflict the promised sanctions (R)[59]. The conditions for successful coercion are such that the voluntary surrender of any claim upon the stakes in dispute is preferable to taking a chance on defiance, which may or may not succeed. This condition is represented in the symbolic description $-S > [(1 - P_t) \times S] + [P_t \times (-S - R)]$. One of the key differences between compellence and deterrence situations is that successful defiance is required to maintain the status quo in the former, while compliance maintains the status quo in the latter. Because maintaining the status quo leaves a decision-maker neither better off nor worse off than she was before, the value of the status quo is zero[60].

Replacing the inequality sign in the formula above with an equality sign allows for the elicitation of the threat probabilities at which a decision maker is expected to be indifferent between compliance and defiance, given a value of $100 for both the stakes and the sanctions. Higher threat probabilities than those required to produce indifference are expected to produce compliance; lower threat probabilities are expected to produce defiance. Thus,

[59] Arguing the importance of a "credible threat of enforcement," to undocumented immigration policy, Kobach appealed to the example of a highway patrol officer issuing speeding tickets. The result of ticketing a few motorists is that "[d]rivers recognize that the threat of enforcement is real, and they change their behavior accordingly." In Kobach's example, the investment of resources necessary to produce a credible threat of enforcement include the portion of the police officer's salary covering his time enforcing the speed limit, the costs of fuel and maintenance of the vehicle, and the opportunity costs of dedicating a police officer to the task of issuing speeding tickets rather than to another task.

[60] Schaub, "Deterrence, Compellence, and Prospect Theory."

Deterrence	Compellence
$-S = [(1 - P_t) \times S] + [P_t \times (-S - R)]$	$-S = [(1 - P_t) \times S] + [P_t \times (-S - R)]$
$0 = [(1 - P_t) \times 100] + [P_t \times (0 - 100)]$	$-100 = [(1 - P_t) \times 0] + [P_t \times (-100 - 100)$
$0 = 100 - 100P_t - 100P_t$	$-100 = 0 - 100P_t - 100P_t$
$-100 = -200P_t$	$-100 = -200P_t$
$.5 = P_t$	$.5 = P_t$

The equivalence of threat probabilities in these two models poses a problem for the student of coercion: According to empirical analyses, higher threat probabilities are required to compel an adversary to give up stakes that she owns than are required to deter an adversary from seeking stakes that she doesn't own. Schaub characterized this discrepancy as a difference in the relative "ease" of compellence and deterrence. Expected utility theory is ill-equipped to explain why it should be easier to deter than to compel; prospect theory offers an explanation of this discrepancy as a product of *framing effects* and *loss aversion*[61].

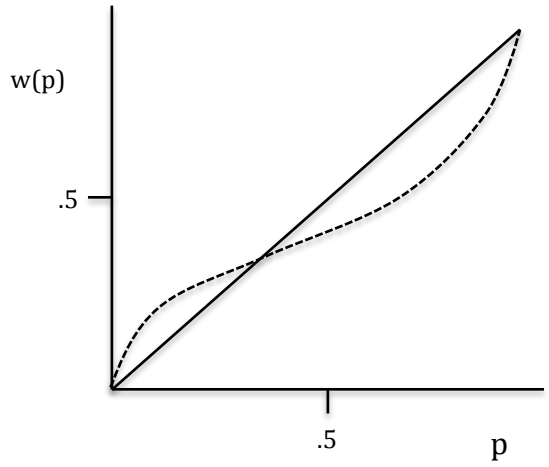
Prospect theory and coercion

A crucial distinction between the coercion models based on expected utility theory and prospect theory revolves around assumptions about linearity: In the former, decision makers are expected to react to changes in both the probability of sanction and the value of the gains in a linear fashion. In other words, increasing the cost of the expected sanctions is thought to have a proportional impact on the probability of compliance with a coercive demand. Similarly, investments in the enforcement apparatus

[61] Berejikian, "Model Building With Prospect Theory"; Schaub, "Deterrence, Compellence, and Prospect Theory."

that increase the probability of enforcement are expected to contribute proportionally to the production of compliance. The same is not true of a model of coercion founded on prospect theory. The theory proposes a non-linear transformation of the probability scale that yields decision weights such that low probabilities are over-weighted and moderate to high probabilities are under-weighted. Additionally, an s-shaped value function implies that incremental changes in the monetary value of gains or losses will have a larger impact on the psychological value of those gains or losses closer to the reference point than changes by the same dollar amount will have further from the reference point. As Kahneman put it, "the subjective difference between $900 and $1,000 is much smaller than the difference between $100 and $200[62]."

Decision makers tend to both overestimate unlikely events and assign a higher decision weight to them that their probabilities warrant. At the other end of the scale, where the probability of a given event is higher, decision-makers tend to underweight those probabilities[63]. Both of these observations are captured in the following diagram:



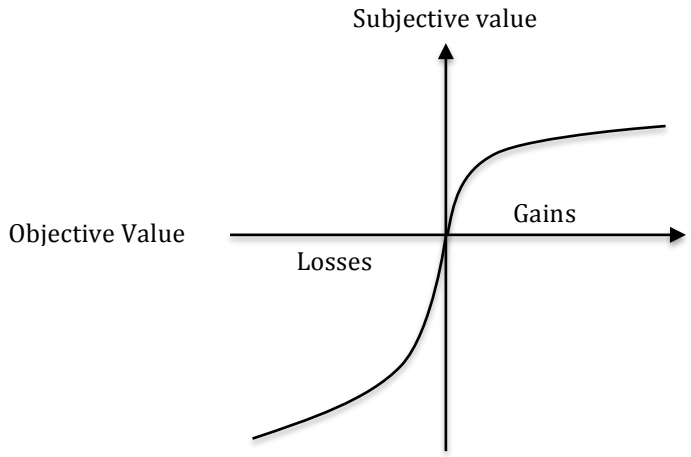
Adapted from Tversky and Kahneman, 1992

[62] Kahneman, *Thinking, Fast and Slow*, 282.
[63] Kahneman and Tversky, "Prospect Theory"; Tversky and Kahneman, "Advances in Prospect Theory"; Kahneman and Tversky, "Choices, Values, and Frames."

In this diagram, the dotted line represents the overweighting and underweighting of prospects throughout the probability scale, which is represented by the solid line extending from the origin with a slope of 1. Kahneman explains the overweighting of low probabilities as a manifestation of the *possibility effect*, which explains the heightened psychological impact of increasing the probability of an event from .00 to .05 relative to a move from .45 to .50. In the former case, the quantitative change in probability is accompanied by a qualitative change; from impossibility to possibility. The corresponding effect that explains the underweighting of high probabilities is the *certainty effect*, by which a change in probability from .90 to .91 has diminished psychological returns relative to the move from .99 to 1.00, or from high probability to certainty[64]. This has the effect of lowering the value of prospective gains as well as prospective losses, which contributes to risk aversion in the domain of gains and risk acceptance in the domain of losses[65].

The hypothetical value function described by Kahneman and Tversky is concave above the reference point and convex below the origin. The origin represents the decision maker's point of reference. The decision maker represents values above the reference point as gains, while values below the reference point represent losses. The slope of the value function changes abruptly at the origin, and is steeper in the domain of losses than in the domain of gains. The latter property illustrates loss aversion, which is the greater psychological value that decision makers place on losses than on equivalent gains. These principles are illustrated in the following diagram:

[64] Kahneman, *Thinking, Fast and Slow*.
[65] Kahneman and Tversky, "Choices, Values, and Frames."



Adapted from Kahneman, 2011

This diagram represents one of the key observations of prospect theory, which is that "losses loom larger than gains."[66] This observation explains why a decision-maker would be unwilling to accept a symmetrical gamble (in which the values of possible gains and losses are equal) with equal odds of winning or losing: The prospect of the loss is more painful than the prospect of the gain is pleasurable. In the real-world choices that face decision makers, which are complex and require the weighing of potential gains against potential losses, the fact that "losses loom larger than gains" leads to a preference for the status quo over change.[67] When faced with a sure loss relative to the status quo, as in the compellence scenario discussed above, decision-makers will tend toward risk-seeking behavior in order to maintain the status quo. In a deterrence scenario, which includes prospective losses and gains, a preference for the status quo leads to risk aversion[68]. *Framing* is the process by which an agent establishes an outcome as either a loss or a gain; how the agent frames an outcome impacts the degree of risk that he or she is willing to accept in seeking to secure or avoid that outcome.

[66] Kahneman, *Thinking, Fast and Slow*, 282.
[67] Kahneman and Tversky, "Choices, Values, and Frames."; Kahneman, *Thinking, Fast and Slow*; Thaler and Sunstein, *Nudge*.
[68] Schaub, "Deterrence, Compellence, and Prospect Theory."

V. Theoretical Analysis

"Stakes" in the migration decision: The rational model

In the neoclassical model of the migration decision, the basis for calculating potential benefits is the wages expected at the destination. These expected wages are weighted with the probability of avoiding deportation and the probability of actually securing those wages (i.e., finding employment). Net benefits are derived by subtracting from these expected wages the expected wages at the place of origin, which are in turn weighted by the probability of receiving those wages. Net benefits are represented symbolically as $[P_1(t)P_2(t)Y_d(t) - P_3(t)Y_0(t)]e^{-rt}dt$, where P_1t = the probability of avoiding deportation from the destination, and $P_2(t)$ is the probability of securing employment and receiving wages $Y_d(t)$ at the destination. The expected wages of remaining at the place of origin $Y_0(t)$ are likewise assigned the probability weight $P_3(t)$, which represents the chances of securing employment at the place of origin. The expected benefits of migration, net of opportunity costs, are then discounted at a rate r that captures the preference for earning wages now rather than later. Finally, the direct costs of migration, including transportation, foregone earnings during migration, psychological costs, and – in the case of undocumented migration – the costs of avoiding detection are subtracted from net discounted benefits. Where net benefits (benefits minus costs) are positive migration occurs[69]. This model of the expected benefits of migration illustrates the rationale behind attrition through enforcement as a deterrent measure: Lowering the probability of avoiding deportation, which is the goal of SB-1070, lowers the expected

[69] Massey et al., "Theories of International Migration."

value of the wages. This is equally true of measures that lower the probability of finding employment, which was the purpose of LAWA. Thus, where ATE reduces the probability of employment as well as the probability of avoiding detection, it reduces the expected value of migration to the United States.

In a model of the migration decision under coercion pressure, the identification of the "stakes" of migration follows straightforwardly from the cost-benefit equation above. The only complication is determining how to account for the probability of avoiding deportation, which is endogenous to the cost-benefit equation, within the coercion model, where it is treated separately. To assume that the "stakes" in the coercion model encompass the entire cost-benefit equation introduces the risk that the probability of avoiding deportation will figure twice in the analysis and lead to an overoptimistic expectation of the success of the policy. For this reason, the probability of avoiding deportation is extracted from the cost-benefit equation and applied in the coercion calculus, represented by $-S = [(1 - P_t) \times S] + [P_t \times (-S - R)]$, where S is equal to $[P_2(t)Y_d(t) - P_3(t)Y_0(t)]e^{-rt}dt - C(0)$ and all other variables are the same as defined above except for P_t, which now encompasses the probability of being discovered by state or local law enforcement and deported. Considered in this way, the stakes are more valuable in the coercion calculus than would be suggested based on the cost-benefit model of migration, but this difference is attenuated in the coercion model once the threat probability of sanctions is applied.

One of the implications of the expected utility coercion model is that equal threat probabilities are required to produce compliance in deterrence and compellence situations where the value of the stakes and the sanctions are equal in both. However, one should

not expect the value of the stakes to be equal for undocumented immigrants to, and undocumented residents of, the United States. For illustrative purposes, consider two hypothetical migrants, *A* and *B*, both of whom are Mexican nationals. Both of them would prefer to be working in the United States for the hypothetical time frame (t): *A* currently resides without authorization in the United States, *B* is considering making an unauthorized journey to the United States. While *B* must factor in the costs of procuring a *coyote* or another means of avoiding detection, *A* does not. While they are both subject to coercive pressure from interior enforcement, only *B* has to worry about getting across the border. Thus, migration costs lower the value of the stakes of residing and working in the United States for *A* relative to *B* (the costs of avoiding detection at the border are sunk costs for *B*, and if he is a rational decision maker he will ignore them). Additionally, the discount factor that favors current earnings over projected earnings will reduce the value of the stakes for *A* compared to *B*. Thus, while the stakes for *A* and *B* are superficially equivalent (i.e. "employment in the United States"), the differential costs of migration and the discount factor that lowers the projected benefit of migration are exogenous factors that impact the valuation of stakes in each case. Because the stakes are more valuable to *B* than to *A*, higher threat probabilities would be required to make him relinquish them than would be required to deter *A* from seeking them, even when both decision makers are assumed to be perfectly rational. Otherwise stated, *A* and *B* are induced to be indifferent between migration and staying put at different threat levels due to their differential valuation of the stakes. If rationality is assumed, then this differential valuation of the stakes may be overcome by a linear application of enforcement pressure to the point that *B*'s initial advantage vis à vis *A* is erased, at which point *B* will migrate.

If the value of the stakes for *A* is 10 percent less than their value for *B*, then increasing the probability that *B* will fail to secure the value of those stakes by 5 percent will equalize the expected value of the stakes to both, as illustrated by the hypothetical case in which *A* stands to gain $900 through clandestine migration (net of costs), which has a .5 probability (p) of success, yielding an expected value of $450. Recalling that the value of the stakes to *A* is 10 percent less than their value to *B*, the following calculation yields the threat probability that would be required to make the expected value of the stakes equal for both *A* and *B*:

$$S(p) = \$450$$

$$\$1000(p) = \$450$$

$$p = \frac{\$450}{\$1000} = .45$$

Thus, an increase in enforcement pressure that decreases the probability of successful defiance by 5 percent compensates for a 10 percent differential in the value of the stakes. These values are strictly hypothetical, but they suggest how the costs of migration can generate a differential between the threat probabilities required to produce compliance in prospective migrants to the United States and those who are already in the country. This observation generates the hypothesis that increasing internal enforcement will have a larger effect on the incoming population than the current population. A prospect theoretical model of the effects of increased enforcement on the undocumented population yields the same hypothesis; the principal difference between the two is that – to take the above example – the decrease in the probability of success required to equalize the *prospective* value of the stakes to *A* and *B* is greater than 5 percent.

Evaluating the stakes: A prospect theoretical perspective

Prospect theory describes two stages in the decision-making process: In the first stage, outcomes are framed as prospective losses or gains; in the second stage, those prospective outcomes are assigned values. For the current study, the reference point for current or prospective undocumented immigrants is assumed to be their status quo: for those who are in the United States, "employment in the United States" is their reference point; for prospective immigrants to the United States, "employment in their country of origin" is their reference point. It is common in deterrence literature to identify the reference point with the status quo; the assumption is also standard in prospect theory, and instances in which the reference point differs from the status quo are treated as exceptional. The fact that Kahneman treats the reference point as synonymous with the hedonic "adaptation level" further supports this assumption – all the more so if Brickman and Campbell's characterization of the adaptation level as a "hedonic treadmill" is an accurate description of how humans psychologically accommodate changes to their circumstances[70].

Another way of formulating the question of what constitutes the reference point for current and prospective undocumented immigrants is to ask whether "employment in the United States" should be considered a potential gain or potential loss. This is similar to, though not the same as, asking whether "residence in the United States" is something that can be gained or lost. For the prospective immigrant residence in the United States is something he or she stands to gain through migration, however, this is not the same as being considered a "gain" for the purposes of framing: Prospect theory allows for the assumption of a value to which a person feels entitled as part of her endowment, whether

[70] Kahneman, *Thinking, Fast and Slow*, 446.

or not she truly owns that value. For the undocumented worker currently in the United States, her employment status and residence is part of her endowment, and it may be assumed that her reference point incorporates her employment status and residence. Leaving her job and residence—in other words, self-deporting—as a response to coercive pressure from law enforcement represents a loss.[71] Therefore, with respect to the outcome in which residence in the United States is secured, the border of the United States becomes a metaphor for framing: Failure to secure residence is a foregone gain to those beyond the border and a loss for current residents.

With this assumption in place, the analysis turns to the question of how residence in the United States is to be valued by undocumented immigrants. This question is best elucidated by a comparison of the two hypothetical immigrants, *A* and *B*, from above. Recall that *B* was contemplating migration to the United States while *A* was already as resident in the country. From the assumption that the status quo represents the reference point for both *A* and *B*, three observations follow:

- The endowment effect implies that residence in the United States is less valuable to *B* than to *A*, who already "owns" those stakes. Likewise, the generalized preference for the status quo implied by the endowment effect is a psychological barrier that *B* must overcome to migrate to the US – this lowers the prospective value of migration to *B*.

[71] This would be true unless her departure were planned. The return migration literature is divided on how to consider return migration: To the micro-economic theorist, for whom return migration represents the failure to realize the expected value of migration, this interpretation is quite plausible. However, NELM theorists, who consider that return migration may represent the fulfillment of the original goals of migration, would be reluctant to pronounce the departure from the United States as a loss (See Cassarino, "Theorising Return Migration: The Conceptual Approach to Return Migrants Revisited.").

- The value of the stakes for *B* is attenuated relative to their value for *A* due to the relative shallowness of the value function above the origin (i.e. in the domain of gains).
- The non-linearity of decision weights further lowers the value of potential gains in a gamble with moderate to high-level probabilities of success (although the same effect inflates the value of the stakes at low probabilities). This implies, roughly, that if *B* believes that migration has a "good chance" of success, her assessment will not weigh as heavily as it should on her decision, while the mere possibility of success will lead her to overweight the probability of succeeding when success is improbable.

The latter two observations adopt the perspective of *B* as a point of reference[72]; since *A* is theoretically employed and present in the United States, he does not consider the probability of securing employment or residence in the country. Conversely, *A*'s deliberations are subject to the impact of diminishing sensitivity and a non-linear reaction to probability because he is contemplating a change with uncertain outcomes. These two cognitive biases will only become important for *B* once he is forced, through the application of coercive pressure, to contemplate abandoning his situation in the United States. Thus, given that the stakes in dispute in the coercive decision situation represented by SB-1070 are "residence in the United States," their prospective value is less for those considering coming to the United States than it is for those who are already here. This is partly because, as in the expected utility model of the migration decision, residence in the United States requires investment in travel and clandestine border passage for those who

[72] As distinct from the "reference point," which is defined more narrowly here.

are considering coming to the United States but not for those who are already here. It is also because the prospective migrant must surmount a suite of cognitive biases that weigh against migration and thus decrease the prospective value of migration. The current undocumented resident has already navigated these psychological barriers.

How do changes in the threat probability of enforcement impact the valuation of stakes by each hypothetical undocumented migrant? Answering this question involves situating the choice upon which enforcement is expected to act within the coercion framework and identifying whether the coercive effort is undertaken to "deter" or to "compel." Deterrent coercion operates within the domain of gains by presenting a decision maker with a choice between maintaining the status quo and accepting the mixed gamble of defiance. In such a situation, the decision maker will be risk averse[73]. This is the situation in which the prospective immigrant finds himself when she is considering an unauthorized journey to the United States: The status quo is maintained by declining to migrate, and defiance is represented by an attempt to secure the stakes of residence in the United States. In contemplating defiance, the prospective value of success is attenuated by diminishing sensitivity and the non-linear transformation of the probability scale. The prospective value lost through failed defiance is inflated by loss aversion: The undocumented immigrant stands to lose her investment in transportation, border passage, and foregone wages if she is detected in the United States before she can recover those costs.

Conversely, deploying coercive pressure in an attempt to compel an undocumented immigrant to self-deport tips her into the domain of loss, in which she is presented with a choice between the sure loss of compliance and the mixed gamble of

[73] Schaub, "Deterrence, Compellence, and Prospect Theory."

defiance. In such situations, she will be risk-accepting[74]. In contemplating defiance, the value of success is augmented by the endowment effect and loss aversion. At the same time, diminishing sensitivity attenuates the value of the prospective loss of failed defiance, and this effect is augmented by the non-linear transformation of the probability scale that "contributes to risk seeking in losses by attenuating the aversiveness of negative gambles."[75] In addition, loss aversion augments the psychological pain of accepting a sure loss.[76] All of these effects combine to push the undocumented immigrant in the United States toward defiance of policies designed to force her to self-deport.

In summary, a prospect theoretical model of decision-making under coercion posits a differential in the effectiveness of threats between current undocumented residents and prospective undocumented immigrants, which corresponds to the framing of outcomes. The prospective value of employment in the United States is less for those who are considering clandestine migration to the country than it is for those who are already in the country. This difference is the product of loss aversion, and it is aggravated by differential rates of diminishing sensitivity in the domains of loss and gain as well as the non-linear reaction to the probability of an outcome. Thus, the three cognitive biases outlined above – the endowment effect, diminishing sensitivity, and the non-linear weighting of outcome probabilities – push decision-makers toward defiance of coercive demands to give up stakes that they own.

VI. Discussion

[74] Ibid.
[75] Kahneman and Tversky, "Choices, Values, and Frames."
[76] Schaub, "Deterrence, Compellence, and Prospect Theory."

The primary effect predicted by this analysis is lower returns to coercive pressure when it is applied to the current undocumented population than when it is applied to prospective undocumented migrants. This effect follows from both expected-utility and prospect theoretical coercion models; however, in the expected utility model, the difference is a product of differential valuation of residence and employment in the United States. Prospective immigrants must subtract the initial investment of travel costs, foregone wages, and clandestine border passage before they realize the value of those stakes, while for the current undocumented resident they are sunk costs. However, once threat probabilities are increased to the point that the initial advantage enjoyed by current undocumented residents is erased, they will be compelled to migrate.

The difference between the two models is that while the reduction in the value of the stakes is a linear function of increasing enforcement pressure in the expected utility model, this is not the case in the prospect theory model. Rather, increasing the threat probability incrementally has a larger impact on those facing a mixed gamble on a gain – which describes prospective immigrants – than on those facing a mixed gamble to avoid a loss – which describes current undocumented residents[77]. In the context of coercive immigration policy, the difference between the sensitivity of current and prospective undocumented immigrants to incremental increases in enforcement pressure may be considered a difference in the enforcement elasticity of migration.

Testing the theory

As documented by the Pew Hispanic Center, recent trends in flows of undocumented immigrants into and out of the United State between 2005 and 2010

[77] Ibid.

confer *prima facie* plausibility on the hypothesis that changing probabilities of avoiding enforcement and securing employment have a differential impact on those who are in the United States and those who are considering coming to the United States. During those five years, in which enforcement efforts were ratcheted up and the prospect of employment was drastically diminished due to the recession, the Pew Hispanic Center estimates that the number of arrivals (undocumented and documented) dropped to 1.4 million, roughly half the number who arrived in the five years between 2000 and 2005. At the same time, the number of departures from the United States increased by roughly 700,000.

The conclusions that may be drawn from these observations are limited. On the one hand, there is a strong inductive case to be made that the changing economic and political conditions have had a larger impact on prospective undocumented immigrants to the United States than on those who already reside in the United States.[78] However, this differential can be explained under expected-utility as well as prospect-theoretical models. The more nuanced hypothesis concerning differential returns to increasing threat probabilities, which emerges uniquely from an application of prospect theoretical assumptions, seems at first glance to be undermined by the Pew report: both the population in Mexico and the population in the United States became twice as likely to "abandon the stakes" over the five years prior to 2010[79].

The Pew study contradicted a prior study that found that there had not been a notable increase in departures from the United States over the period from 2005-2010.[80] The reason for this discrepancy is instructive: The two studies were based on different

[78] Passel, Cohn, and Gonsalez-Barrera, "Net Migration from Mexico Falls to Zero—and Perhaps Less."
[79] Ibid.
[80] Passel and Cohn, "Unauthorized Immigrant Population."

datasets, with the prior report focusing on workers as unit of analysis, and the later study focusing on households. Taken together, the two reports could reflect an underlying trend in the number of Mexican immigrants who are leaving with no intention of returning, or of establishing permanent residence in Mexico. Alternately, because the survey on which the prior report captures movement from foreign household to domestic household but does not capture movement of entire households, it is possible that the trend in return migration to Mexico was understated in previous studies.[81]

Research design for future work

An ideal study of the impact of cognitive bias in decision-making among undocumented immigrants under coercive pressure would replicate, as closely as possible, methodologies in previous studies that have tracked changes in the undocumented population over time. In principle, a time-series analysis of changes to the population would allow the researcher to capture the impact of new factors as they emerge: in this case, those factors would be the adoption of LAWA and SB-1070.

Following Lofstrom et al., this ideal study would include a procedure for taking into account the global shift in the labor market as a result of the economic recession that began in 2008. In their study, macro-level changes in the labor market of the United States were accommodated through the construction of a "synthetic Arizona" based on employment trends in states that were judged to be similar – in their labor market and population characteristics – to Arizona.[82] If the same technique were applied to the proposed study, the applicability of a prospect theoretical model could be judged based

[81] Passel, Cohn, and Gonsalez-Barrera, "Net Migration from Mexico Falls to Zero—and Perhaps Less."
[82] Lofstrom, Bohn, and Raphael, *Lessons from the 2007 Legal Arizona Workers Act*.

on the degree to which it accurately captures trends in the undocumented population of Arizona after the implementation of LAWA and SB-1070.

It is crucial for this analysis that the two prongs of ATE be considered separately. This is primarily due to the assumption that coercive and non-coercive approaches vary in how they impact the judgment of prospects; however, it is also due to the practical need to separate the effects of the two policy prongs. It is for this reason that Arizona is judged to be more suitable for a potential application of the prospect theoretical model than other states in which the two prongs of ATE have been introduced simultaneously.

Variables

The dependent variable in the proposed study is *self-deportation.* In a thoroughgoing consideration of the differential impact of coercive ATE on prospective and current undocumented populations, departures from the state of Arizona by undocumented migrants could serve as a proxy for self-deportation. The analytic strategy for testing prospect theory against data from Arizona will involve two stages: one in which arrivals and departures post-SB-1070 are compared to arrivals and departures pre-SB-1070, and a second in which the change (if there is a change) in the rate of departures is compared to the change in the rate of new arrivals. Taken together, these techniques will allow the researcher to determine whether or not there is a significant difference in the impact of SB-1070 on arrivals and departures. Assuming that an increase in departures after SB-1070 is attributable to self-deportation in response to coercive pressure, increases in departures in response to incremental increases in enforcement can be compared to decreases in new arrivals to estimate the enforcement elasticities of

migration in the two groups. Based on the models outlined above, the expectation is that the rate of departures will be less elastic in response to coercive pressure than the rate of arrivals. If this differential is observed in empirical study, it will provide strong support for the models.

While data are available on the total number of undocumented residents of a particular state, as well as on flows into and out of the United States as a whole, it is not certain that data are available to measure the flows into and out of a particular state with confidence. In the absence of these data, however, the researcher would have to turn to the overall population as the dependent variable. In this case, the analysis would devolve to a consideration of the relative impact of the coercive and non-coercive prongs of ATE, and it would not be possible to attribute any discrepancies between the two to the operation of cognitive biases.

In the event that data on inflows and outflows are available at the state level, regression analysis would determine the responsiveness of those flows to the independent variables adopted in the study. These variables would fall into two classes: those impacting the probability of securing employment, and those impacting the threat of enforcement. In past studies, measures of labor market health – notably the unemployment rate – have been taken as an index of the probability of obtaining employment.[83] In the current study, the unemployment rate would be included as an independent variable along with proportion of businesses that have adopted E-verify. In

[83] Hanson and Spilimbergo, "Illegal Immigration, Border Enforcement, and Relative Wages."

measuring changes in the probability of enforcement, previous studies have focused on money and manpower devoted to border enforcement[84].

VII. Limitations

Empirical analysis of trends in the undocumented population is subject to three principal limitations that emerge from (1) the potential unsuitability of agency-frame theories of migration for building a comprehensive understanding of migration trends, (2) the difficulty of obtaining precise and detailed information on the undocumented population, and (3) the availability of "escape routes" in the form of states with relatively lax enforcement regimes. The following section explains each of these challenges, and suggests how they might be accommodated in future empirical work.

Theoretical Framework

As the empirical study of migration evolved over the twentieth century, theorists moved from the analysis of the migration decision as an economic concern to a broader consideration of migration as an inevitable product of the expansion of cultural and economic networks through globalization. This emerging analytical focus is typified in Sassen's work on global cities and the impact of foreign investment on labor and capital mobilization.[85] Arguing that the "combination of [foreign direct investment and outsourcing] should have been a deterrent to the emergence of new migrations or a least a disincentive to their continuation at growing levels," Sassen observes that the opposite

[84] Angelucci, "US Border Enforcement and the Net Flow of Mexican Illegal Migration"; Hanson and Spilimbergo, "Illegal Immigration, Border Enforcement, and Relative Wages."
[85] Massey et al., "Theories of International Migration"; Sassen, *The Mobility of Labor and Capital*; Sassen, "Regulating Immigration in a Global Age."

has been true: recipients of foreign direct investment and jobs outsourced from the US have been among the top exporters of migrant labor. To Sassen, this trend presents a problem for traditional approaches to understanding migration. She argues for a broader consideration of the role of cultural, social, and economic networks in transnational migration.

To the extent that migration is subject to forces that escape the notice of neo-classical models of the migration decision, the explanatory power of both the expected utility and prospect theoretical models of the migration decision will be limited. This limitation may be addressed in part through cross-pollination of the economic and structural frameworks: network effects may be incorporated into economic and behavioral economic models described above as a factor that augments the probability of finding employment and evading detection. However, the broader criticism of structural theorists – that not all of the determinants of migration are easily captured in an economic model – is one that the models included here are not equipped to fend off.[86]

Shortage of Reliable Data on the Undocumented Population

Another difficulty, common to any quantitative study of the undocumented population, is the impossibility of capturing precise and detailed information about the stocks and flows of undocumented immigrants. The most authoritative and widely disseminated estimates of the size of the undocumented population are those of Jeffrey Passel, who developed the residual technique while he was conducting research at the urban institute. The basic methodology of Passel is to subtract the number of authorized foreign-born persons in the population from the total number of foreign-born; the residual

[86] Massey et al., "Theories of International Migration."

becomes the basis for estimates of the undocumented population[87]. The technique involves assumptions about the rate at which undocumented persons show up in census data, and the estimates cited are typically the midpoint in a "range of possible values that could be the true number."[88] The limitations of the residual technique translate into limitations of any study that takes those estimates as the basis for examining trends in the undocumented population.[89]

Escape Routes

An additional limitation of empirical research based on this model stems from the observation that undocumented residents who are subject to coercive pressure from ATE are not presented with the binary choice between taking their chances in Arizona and returning to their country of origin: states with laxer enforcement are available to the undocumented residents of Arizona as a means of escaping the coercive environment of Arizona without relinquishing the stakes of residence or employment in the United States. This is a serious difficulty, because it is impossible to know, short of testing the model against empirical data, how the availability of escape routes will impact the decision situation of undocumented residents of Arizona vis à vis prospective undocumented immigrants to the United States.

There are two polar and conflicting scenarios that emerge from this observation, neither of which can be pronounced *a priori* to be more or less probable than the other: under the first scenario, the predicted effects of cognitive biases hold, and flows of undocumented residents from Arizona are demonstrated to be less elastic than flows into

[87] Passel, "Unauthorized Immigrants."
[88] Passel and Cohn, "Unauthorized Immigrant Population," 3.
[89] Passel, "Unauthorized Immigrants"; Passel and Cohn, "Unauthorized Immigrant Population."

Arizona in response to increasing enforcement pressure. This effect would be in evidence even if SB-1070 has the effect of forcing a mass exodus of undocumented residents, and would be visible where undocumented immigrants to the US strenuously avoid Arizona while current undocumented residents less strenuously flee the state.

Under the second scenario, however, risk aversion in the domain of gains leads to an overall drop in the incoming population in response to factors that impact the probability of gaining employment, while loss aversion leads those who are already in the country to stay. Prospects in other states dominate prospects in Arizona, and a mass exodus from Arizona occurs. With reduced migration overall, this mass exodus is the primary observable effect of SB-1070, and gives the impression that the measure was effective and that the cognitive biases of prospect theory do not significantly impact the decision process of undocumented residents.[90]

This limitation stems from the complex interaction between policy, migration, and the forces that govern migration. It also stems from the lack of empirical resolution on the question of whether or not SB-1070 has had a noticeable effect on the undocumented population of Arizona, and highlights the need to assemble a corpus of research in which the assumptions of prospect theory are tested against real-world data.

Summary

Prospect theory, as a tool for analyzing complex decisions taken by real-world decision-makers, is still in its infancy. This paper was developed to address the

[90] Between these two scenarios exists a third possibility, which is that SB-1070 will transform the profile of the typical undocumented resident of Arizona. Under this scenario, families who intend to stay in the United States, or who have larger stakes in the country (children in school, cars, homes, etc.) will leave Arizona and undocumented workers who have less to lose will go to Arizona, where the reduction in the supply of low-wage workers raises the price of informal labor.

theoretical challenges that emerge from an attempt to incorporate cognitive biases into a model of the migration decision in an attempt to understand how that decision is impacted by coercive policies directed at the undocumented population. The model predicts that current undocumented residents of Arizona will be more tolerant of increased enforcement than prospective undocumented immigrants to Arizona, and therefore less responsive to increases in enforcement pressure. This prediction remains to be tested, but if future analysis bears out the resistance of decision-makers to coercive pressure when they are in a losses-frame, it will reveal that coercion undertaken to compel a person to accept a loss is an inefficient strategy.

References

"After SB1070: Adios Arizona." *The Economist*, November 25, 2010. http://www.economist.com/node/17581892.

Airaksinen, Timo. "An Analysis of Coercion." *Journal of Peace Research* 25, no. 3 (September 1, 1988): 213–227. doi:10.1177/002234338802500302.

Angelucci, Manuela. "US Border Enforcement and the Net Flow of Mexican Illegal Migration." *Economic Development and Cultural Change* 60, no. 2 (January 1, 2012): 311–357. doi:10.1086/662575.

Archibold, Randal C. "Arizona Is Split Over Hard Line on Immigrants." *The New York Times*, December 14, 2007, sec. National. http://www.nytimes.com/2007/12/14/us/14arizona.html.

Arizona v. U.S., 132 S.Ct. 2492 (2012).

Berejikian, Jeffrey D. "Model Building With Prospect Theory: A Cognitive Approach to International Relations." *Political Psychology* 23, no. 4 (2002): 759–786. doi:10.1111/0162-895X.00306.

Biggs, P. *Support Our Law Enforcement and Safe Neighborhoods Act*, 2013.

Borjas, George J. *Heaven's Door: Immigration Policy and the American Economy*. Princeton University Press, 2001.

Campbell, Kristina. *The Road to S.B. 1070: How Arizona Became Ground Zero for the Immigrants' Rights Movement and the Continuing Struggle for Latino Civil Rights in America*. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, August 18, 2011. http://papers.ssrn.com/abstract=1911435.

Cassarino, Jean-Pierre. "Theorising Return Migration: The Conceptual Approach to Return Migrants Revisited." *International Jounral on Multicultural Studies* 6, no. 2 (2004): 253–279.

Coutin, Susan Bibler. "Cultural Logics of Belonging and Movement Transnationalism, Naturalization, and U.S. Immigration Politics." *American Ethnologist* 30, no. 4 (2003): 508–526. doi:10.1525/ae.2003.30.4.508.

Davidson, Adam. "Do Illegal Immigrants Actually Hurt the U.S. Economy?" *The New York Times*, February 12, 2013, sec. Magazine. http://www.nytimes.com/2013/02/17/magazine/do-illegal-immigrants-actually-hurt-the-us-economy.html.

Donato, Katharine M., Jorge Durand, and Douglas S. Massey. "Stemming the Tide? Assessing the Deterrent Effects of the Immigration Reform and Control Act." *Demography* 29, no. 2 (May 1, 1992): 139–157. doi:10.2307/2061724.

"Fact Sheet: Delegation of Immigration Authority Section 287(g) Immigration and Nationality Act." Accessed May 17, 2013. http://www.ice.gov/news/library/factsheets/287g.htm.
FY 2011 Appropriations Report. Arizona: Joint Legislative Budget Committee, May 2010.
Gunderson, Martin. "Threats and Coercion." *Canadian Journal of Philosophy* 9, no. 2 (June 1, 1979): 247–259. doi:10.2307/40231092.
Hanson, Gordon H., and Antonio Spilimbergo. "Illegal Immigration, Border Enforcement, and Relative Wages: Evidence from Apprehensions at the U.S.-Mexico Border." *The American Economic Review* 89, no. 5 (December 1, 1999): 1337–1357. doi:10.2307/117062.
Kahneman, D., and A. Tversky. "Choices, Values, and Frames." *American Psychologist* 39, no. 4 (1984): 341.
Kahneman, Daniel. *Thinking, Fast and Slow*. 1st ed. Farrar, Straus and Giroux, 2011.
Kahneman, Daniel, and Amos Tversky. "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica* 47, no. 2 (March 1, 1979): 263–291. doi:10.2307/1914185.
Kobach, Kris W. "Attrition through Enforcement: A Rational Approach to Illegal Immigration." *Tulsa Journal of Comparative and International Law* 15 (2008 2007): 155.
Lacayo, A. E. "One Year Later: a Look at Sb 1070 and Copycat Legislation." *Washington, DC: National Council of La Raza. Retrieved July* 23 (2011). http://ww.stjames-cathedral.net/esl/docs/One%20Year%20Later%20A%20look%20at%20SB1070.pdf.
League of United Latin American Citizens v. Wilson, 997 F. Supp. 1244 (Dist. Court, CD California 1997).
Lofstrom, Magnus, Sarah Bohn, and Steven Raphael. *Lessons from the 2007 Legal Arizona Workers Act*. Public Policy Instit. of CA, n.d.
Massey, Douglas S., Joaquin Arango, Graeme Hugo, Ali Kouaouci, Adela Pellegrino, and J. Edward Taylor. "Theories of International Migration: A Review and Appraisal." *Population and Development Review* 19, no. 3 (September 1, 1993): 431–466. doi:10.2307/2938462.
Massey, Douglas S., and Zai Liang. "The Long-term Consequences of a Temporary Worker Program: The US Bracero Experience." *Population Research and Policy Review* 8, no. 3 (September 1, 1989): 199–226. doi:10.1007/BF00125401.
McCord, Joan. *Coercion and Punishment in Long-Term Perspectives*. Cambridge University Press, 1998.
McDONNELL, PATRICK J. "Prop. 187 Found Unconstitutional by Federal Judge." *Los Angeles Times*, November 15, 1997. http://articles.latimes.com/1997/nov/15/news/mn-54053.
Mexico Migration Outlook. BBVA Bancomer, November 2010.
Miller, Teresa A. "Blurring the Boundaries Between Immigration and Crime Control after September 11th." *Boston College Third World Law Journal* 25 (2005): 81.
Nill, Andrea Christina. "Latinos and S.B. 1070: Demonization, Dehumanization, and Disenfranchisement." *Harvard Latino Law Review* 14 (2011): 35.
Passel, Jeffery, and D'Vera Cohn. "Unauthorized Immigrant Population: National and State Trends, 2010." *Pew Hispanic Center*. Accessed December 14, 2012. http://www.pewhispanic.org/2011/02/01/unauthorized-immigrant-population-brnational-and-state-trends-2010/.
Passel, Jeffrey. "Unauthorized Immigrants: How Pew Research Counts Them and What We Know About Them." *Pew Research Center*. Accessed May 17, 2013. http://www.pewresearch.org/2013/04/17/unauthorized-immigrants-how-pew-research-counts-them-and-what-we-know-about-them/.
Passel, Jeffrey, D'Vera Cohn, and Ana Gonsalez-Barrera. "Net Migration from Mexico Falls to Zero—and Perhaps Less." *Pew Hispanic Center*. Accessed May 17, 2013. http://www.pewhispanic.org/2012/04/23/net-migration-from-mexico-falls-to-zero-and-perhaps-less/.
Ripstein, Arthur. "Authority and Coercion." *Philosophy & Public Affairs* 32, no. 1 (January 1, 2004): 2–35. doi:10.2307/3557980.
Sassen, S. "Regulating Immigration in a Global Age: A New Policy Landscape 1." *Parallax* 11, no. 1 (2005): 35–45.
Sassen, Saskia. *The Mobility of Labor and Capital: A Study in International Investment and Labor Flow*. Cambridge University Press, 1990.

Schaub, Gary. "Deterrence, Compellence, and Prospect Theory." *Political Psychology* 25, no. 3 (2004): 389–411. doi:10.1111/j.1467-9221.2004.00377.x.
Sidman, Murray. *Coercion and Its Fallout*. Revised. Authors Cooperative, 2000.
"Study: 100,000 Hispanics Left Arizona After SB1070." Text.Article. *Associated Press*, November 12, 2010. http://www.foxnews.com/politics/2010/11/12/study-hispanics-left-arizona-sb/.
Thaler, Richard H., and Cass R. Sunstein. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Updated. Penguin Books, 2009.
The Editorial Board. "The Immigration Spring." *The New York Times*, March 31, 2013, sec. Opinion. http://www.nytimes.com/2013/04/01/opinion/the-immigration-spring.html.
"Transcript of the Second Presidential Debate in Hempstead, N.Y." *The New York Times*, October 16, 2012, sec. U.S. / Politics. http://www.nytimes.com/2012/10/16/us/politics/transcript-of-the-second-presidential-debate-in-hempstead-ny.html.
Tversky, A., and D. Kahneman. "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk and Uncertainty* 5, no. 4 (1992): 297–323.
Varsanyi, Monica, ed. *Taking Local Control: Immigration Policy Activism in U.S. Cities and States*. Stanford University Press, 2010.
Vaughan, J. *Attrition through Enforcement: A Cost-effective Strategy to Shrink the Illegal Population*. Center for Immigration Studies Washington, DC, 2006. http://www.ilw.com/articles/2006,0605-vaughan.shtm.