

Comparing the “D.V” lottery with the point system: costs, benefits and a superior alternative

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Abstract

The diversity visa lottery popularly known as the D.V lottery is a U.S relatively new immigration policy that was shrouded with a lot of controversy at its inception in 1995. The main stated objective of this policy is to increase diversity in the U.S. However, from the policy inception, immigration specialists seriously doubted the claimed objective. They strongly believe that the congressional sponsors of the visa lottery adopted the "diversity" mantra as a cover for a program that was actually designed to satisfy other objectives. Whether or not this claim is true is yet unanswered objectively and would be probably had to verify.

In this paper, we review in details the D.V immigration policy program considering qualitatively its potential costs and benefits to the US. We then highlight in details the pros and cons of the most commonly suggested alternative to this program, the point systems. Then using simple cost/ benefit techniques, we attempt to estimate the fiscal benefit or burden of each program under certain conditions and assumptions. Finally, we propose an alternative policy that would achieve the diversity objective and dominates both policy programs for the U.S in terms of net fiscal benefit.

1.0 Motivation/Introduction

From the study of public economics, we know that the presence of market failures necessitates the existence of government and policy interventions. However, what is more important to economists involved in policy analysis is whether government policies and the programs and instruments used to achieve policy objectives are efficient or best among possible alternatives. With this in mind, we attempt to study a recent immigration policy in the U.S comparing it the point system used in Canada and Australia.

There are several ways people can immigrate and become lawful residents of the U.S and the inception of the diversity visa lottery (D.V lottery) in 1995 provided yet another avenue through which families from most countries in the world meeting some criteria could immigrate to the United states of America.

From 1995 when the first 40,301 gained entrance into the U.S through this means, every year 55,000 more people from selected countries all over the world are issued this immigration visa. Though immigrants through this means is less than 10 % of the number of new arrival who are issued permanent residence each year, nevertheless, this new avenue for potential immigrants is still important. To emphasize this point, it is important to note that by 2001 about 300,000 people had become permanent residents of the U.S based on this immigration policy program. More importantly, this number becomes more significant when we ask the question whether these new residents are going to be assets or burdens to the system. For example, in March 2002, 6.1% of immigrants were unemployed in the U.S and thus constitute a liability on the economy¹. Furthermore, it is an important question that cannot be brushed aside since with five years of residence, immigrant are permitted by law to file for citizenship and are then entitled to every benefit of a U.S citizen. Hence, the potential impact of the policy on government expenditure and the U.S in general is not trivial in the long run especially if the policy is inefficient.

According to Section 131 of the Immigration Act of 1990 (Pub. L. 101-649), the diversity visa program is aimed at increasing diversity in the U.S. This objective is achieved by encouraging immigration from countries, which the department of state has shown over the last five years have had low immigration to the U.S. Using a selection system and criteria described in INA: ACT 203 - ALLOCATION OF IMMIGRANT VISAS Sec. 203. [8 U.S.C. 1153], a lottery is conducted yearly excluding countries with over 50,000 immigrants to the U.S in the last five years².

¹ Source United States census bureau (2003)

² Examples of countries excluded are United Kingdom, Canada, Mexico, China and India

The issue we are trying to address here is not if immigration generally is bad for America. Moreover, several papers have shown empirically that some forms of immigration over the last 100 years have been beneficial to the U.S. Furthermore; the importance of increasing diversity in a country with the history and idiosyncrasies of the U.S cannot be overemphasized.

The question, is why a lottery immigration program rather than a point system used in countries like Canada and Australia? Could this policy program with an arbitrary outcome have more benefits than costs to the U.S than a point system? This question is important especially since the point system, in addition to attempting to meet the diversity objective, provides more revenue for these countries government. Also, the point systems' long rigorous process of selection attempts to ensure to a large extent that immigrants would not become a burden on the receiving country.

If we assume that government is supposed to choose the best policy that achieves its objective subject to given constraints, it is important to find out how this policy performs with respect to this criterion under different scenarios. This could provide evidence on why the choice of this policy by the US government or point towards its inefficiency. Our primary focus in this paper is to highlight qualitatively and with cost/benefit techniques possible costs and benefits of this policy choice and the point system under different conditions. Then propose an economically superior alternative, which would also achieve the objective of diversity.

A brief outline of the paper is as follows: First, we describe in details both the diversity visa programs process and the point system of immigration used in Australia and Canada. Second, we review some empirical literature on immigration and its impact on the US in an attempt to support our review of the policy with respect to its pros and cons. Third, we highlight possible costs and benefits of both the D.V program and the point system. Then using a framework with simplifying assumptions, we evaluate using cost/ benefit techniques how both policies would perform in the US. Our aim is to provide evidence on when the present D.V program might be the best among present alternatives and when a point system would dominate. Finally, we propose a policy program that is based in part on the D.V program that dominates these two policy programs in general and then highlight possible future empirical extensions of this paper.

2.0 The diversity visa lottery versus the point system

2.1 History of the DV program

According to Krikorian (1996), few countries in Asia and Latin America have dominated the immigrant flow since the passage of the 1965 Immigration Act. In 1986 Congress, addressing what it perceived to be an inadequate number of European immigrants, authorized the State Department to hand out "diversity visas". This visa was a kind of immigration affirmative action, mainly for Europeans.

However, as the program had few defenders even immigrant advocacy groups wanted its elimination, the program did not last very long. In the early 90s, an attempt was made to resuscitate this diversity policy objective though in a different way. The U.S Rep. Charles Schumer (D-N.Y.) offered a successful amendment, which became the Diversity (DV) lottery program. Subsequently from 1995, the congressionally mandated Diversity Immigrant Visa Program was administered on an annual basis by the Department of State and conducted under the terms of Section 203(c) of the Immigration and Nationality Act (INA). The Act makes available 55,000 permanent resident visas annually to persons from countries with low rates of immigration to the United States³.

The full details of this act can be found in the Immigration and Nationality ACT Title II - Immigration Chapter 1 – Selection system INA: ACT 203 - Sec. 203. [8 U.S.C. 1153].

2.2 Procedure for running the D.V policy

The D.V program is run under strict rules. The first step for applicants from eligible countries for the diversity visa lottery is to complete what the State Department calls an "application for registration"⁴. Second, the applicant must check with the State Department for publication of the explicit instructions on how to apply or file for the program. This information is usually published the August before the drawing of the current fiscal year

Based on this publication, applications from different regions must be submitted to designate addresses in the consular within a stipulated time frame usually between October and November. For example for 2002, the application bracket was from noon October 7 to noon November 6. Applications received that are qualified will then be assigned a number in order. A qualified applicant must have at least a high school education or its equivalent or, within the past five years, have two years of work experience in an occupation requiring at least two years training or experience. After all envelopes are numbered, all numbers assigned will be randomly selected by a computer

³ Note 5,000 out of the 55,000 visas go to the Nicaragua relief program.

and ranked. Separate lotteries are done for the various regions of the world as defined by the State Department. This is done so those applicants in one part of the world do not compete for visa slots with applicants in another part of the world. The 50,000 available visas are allotted to different regions pursuant to a system devised by the State Department. Usually a greater number of visas go to regions with lower rates of immigration, and no visas go to citizens of countries sending more than 50,000 immigrants to the U.S. in the past five years. Anyone who is selected under this lottery will be given the opportunity to apply for permanent residence. If permanent residence is granted, then the individual will be authorized to live and work permanently in the United States. Winners are also allowed to bring their spouse and any unmarried children under the age of 21 to the United States. Hence, winning the lottery does not ensure permanent residence in the U.S. Usually, about 80,000 to 100,000 are issued the diversity visa application with an aim of 50,000 finally getting the permanent resident visas. Documentation of the applicant's eligibility (i.e., work experience or high school diploma and native country) does not have to be submitted with the D.V application. The State Department ignores these requirements during the lottery selection process and will only deal with them after a lottery winner applies for the actual visa. This implies that once a D.V winner applies for an immigrant visa through consulate processing or adjustment of status, he or she will have to produce documents of eligibility. All D.V lottery winners who apply for the immigration visa, pay the cost of US\$ 260 for each formal immigrant visa application and successful applicants on issuance pay U.S\$ 65. After application is filed. A U.S official conducts a visa interview. During the interview, principal applicants must provide proof of a high school education or its equivalent, or show two years of work experience in an occupation that requires at least two years of training or experience within the past five years. If all eligibility requirements were met, the permanent resident visa would be issued. A caveat worth noting is that not more than 7% of visas issued for each region must come from a single country. In 1996 for example 58,000 were issued diversity immigrants visas. The leading countries of origin for diversity immigrants were Nigeria, Ghana, and Bangladesh, each with about 4,000.

With some knowledge now on the process of this program, we would look at the procedure of the possible alternative: the point system used in Canada or Australia. The objective is to improve our evaluation of this policy and the acclaimed best alternative.

⁴ In the past the application for the dv lottery was mailed in but since 2003 applications are sent online.

2.3 The point system in Canada

The point system is an immigration policy used in several countries. In Canada, this policy aims at achieving the objective of diversity but is also focused on getting skilled worker/professional immigrants. As the program has no date or time restriction potential immigrants can apply anytime and applications are reviewed continually. Immigrants through the point system are popularly known as independent immigrants. Applicant aged 19 or over must pay \$500 CAN application processing fee, plus \$975 CAN for the Right of Landing Fee once visa is granted. For applicants younger than 19 years of age, only \$100 CAN processing fee and no Landing Fee is required. Applicants once granted the visa without an awaiting job position must also show support for available fund to support individual or family for up to six month on arrival in Canada. It is important to note that unlike the D.V lottery, applicants can come from any country in the world.

Furthermore, in all states but Quebec, which has its own selection criteria, applicants are assessed based upon a series of factors, which in theory, are designed to indicate the likelihood of becoming economically established in Canada. Each factor is allotted a maximum number of points, and applicants must attain at least 75 points in order to qualify for a Canadian Immigrant Visa⁵. Whatever the number of points awarded, visa officers always have the discretion to accept or refuse an application based on a substituted evaluation. The factors in the selection criteria are as follows: Education: applicants are awarded from 0 to 25 points under this factor. Language skills: applicants are awarded a between 0 to 24 points. Experience: maximum points awarded are 21. Age: applicants are awarded up to 10 points under this factor. Arranged employment: applicants are awarded a maximum of 10 points. Adaptability: maximum points awarded are 10.

In Quebec, skilled worker/professional applicants intending to reside in Montreal or another city in the province of Quebec are selected based upon a different set of criteria than applicants who wish to settle elsewhere in Canada (discussed in 2.3.2). Successful applicants destined to Quebec are issued a Quebec Certificate of Selection. They must then successfully complete medical and security examinations conducted by the Canadian government in order to be granted a Canadian Immigrant Visa.

⁵ The criterion for the point system in Canada was updated recently and the pass mark moved from a 70 to a 75. This tightened criterion has been met with a lot of criticisms.

In Quebec, the process is slightly different. The Quebec government selects applicants based upon factors relating to age, education, work experience, French language ability and ties to Quebec. Similar to the other states, the selection system is in theory designed to indicate the likelihood of succeeding in settling in the province of Quebec. The Quebec selection process is divided into two stages. In the first stage, applicants must satisfy one of the following three tests:

- They must have at least six months of full-time work experience in an occupation that the Quebec government has determined is in high demand; OR
- They must have at least six months of full-time experience in any occupation, and they must also have assured employment in Quebec; OR
- They must have at least six months of full-time experience in any occupation (other than an occupation that the Quebec Government has determined is not in demand), and they must also score at least 30 points on an Employability and Professional Mobility Assessment.

Under each of the above three tests, applicants must satisfy all of the minimum education and work-related requirements set out in the *Canadian National Occupational*. Applicants who satisfy any one of these three tests then proceed to the second stage of the Quebec selection process. In stage two, applicants are then assessed based upon a second series of factors: training, employment, experience, adaptability, age, knowledge of languages, spouse's characteristics, children and financial autonomy capability. Each factor is allotted a maximum number of points, and applicants must attain at least 65 points (70 points if they are married) in total to qualify for a *Quebec Certificate of selection*.

2.4 A summary of the point system in Australia

In Australia, the point system also serves dual objectives: first as a means to acquire skilled immigrants and also to increase diversity. The process is also very similar to that of Canada. In order to qualify for skilled migration, you must pass the skilled migration points test and satisfy certain basic requirements similar to the Canadian requirement. However, before application to immigrate, applicant must also apply to have skills assessed by the relevant Australian assessing authority designated to evaluate applicant's skills for his nominated occupation. It is this assessing authority who will determine whether or not potentials immigrants skills are suitable for the skilled occupation nominated. The payments for potential immigration to Australia are higher than Canada at about US\$1500.

2.5 Comments on both policy programs

It is easy to conclude from the description of the diversity visa lottery program and the points program, that the point system despite its inherent arbitrariness has a greater potential of increasing welfare of the receiving country. However, one cannot make definite conclusions on which policy is superior without careful analysis of the costs and benefits of each policy and looking at how each policy performs under different scenarios. In the next section of this paper, we highlight research on the impact of immigration and immigration policy generally in the U.S, as a support for our qualitative analysis of the costs and benefits of the D.V lottery versus the point system. Finally we propose a policy based on the diversity program which dominates both present policies.

3.0 Immigration and its impact on welfare in the U.S

Several economists have looked into the dynamics and issues surrounding immigration to the U.S in the past. Though many economists had argued theoretically on the impact of immigrants on the U.S like Bernard (1953), Piore (1979), Briggs (1974), there had been little empirical work to verify claims and propositions until the late 70s. There is no general consensus in the literature on the impact of immigration on the U.S, though some analyses are more compelling than others are. Chiswick (1978) pioneering work using cross-sectional data analyzed how immigrant skills adapted to host countries labor market. He noted that immigrant first earn less than natives upon arrival in the U.S and over time overtake native in earnings/ income. Borjas (1985) questioned the validity of Chiswick's inferences as Chiswick's work had a problem of identification. Grossman (1982) estimates a translog production function to determine the substitutability between capital, native workers and foreign-born workers. Her results indicate that immigrant do not pose a serious threat to natives though effect is not negligible. De Freitas and Adriana (1984) provides evidence that immigration has provided manual workers for the manufacturing sector in many parts of the U.S however, the effect of these immigrants on less skilled workers wages is uncertain. Similar results were found by Grossman (1984), who showed that there was evidence supporting the allegation of immigrants taking away native workers jobs in regions with heavy immigrant concentration and less skilled indigenous people but the overall quantitative impact was negligible. Based on her results the sectors most affected by immigrants were agriculture and manufacturing. Simon (1982) estimates the use of public service by the immigrant family. He's results show that the immigrant family who entered the U.S less than 10 years ago uses about 15- 48 % less social services than does the average native. A more rigorous analysis by Blau (1984) provides evidence that all else equal, immigrants families are estimated to depend less on welfare payments

than American born families. However, families headed by immigrants on a whole appear to receive about the same level of transfer payments as otherwise comparable native families. Greenwood and Mc Dowell (1986) summarizing the factor market consequences of U.S immigration noted the decline in recent years of aggregate quality of immigrants. From the above review of early papers in the literature, it is clear that there was no consensus on the impact of immigrants on the U.S . In the 90s, though the econometric tools for analysis improved dramatically, results were still varying. Borjas, Freeman and Katz (1992) provided evidence on the macro impact of immigration. They conclude based on their findings that probably a third of the 10% point decline in the relative wage of high school drop outs between 1980 and 1988 can be attributed to the increase in the less skilled immigrants' flow. However, White and Hunter (1993) analyses seem to contradict the result of Borjas et al. Their results provide evidence against the effect of migration on local labor markets. Huddle (1993) in his analysis of the impact of immigrants on welfare assumes immigrants pay only 7% of their income in taxes and concludes based on his analysis that immigrants pay less in total taxes than they take out of the system. On the other hand, Clark (1994) reaches a conclusion that immigrants generate a net surplus of \$27 billion by comparing taxes paid by immigrants to increase expenditure on programs for welfare and education as a result of immigrants. A significant article I would focus on was Borjas (1994). In this article 'The economics of immigration' the author analyzed wage convergence between immigrants and ethnically similar natives. He's very compelling results provide evidence against wage convergence between immigrants and natives. Moreover, he notes that negative changes in the quantity of human capital are partially responsible for the decline in relative immigrants' wage implying a decline in relative skills of more recent immigrants. His results also provide evidence to support the great deal of diversity in economic experience of various immigrant groups in the U.S. For example, he noted the slow down in wage convergence to natives for both Mexican and Asian immigrants compared to previous cohorts. While for Caucasian immigrants, they not only earned more than white native born on arrival but over time the wage difference increased rapidly. This could suggest the high quality of skills in immigrant Caucasian. In this same paper, Borjas looked at language and the process of wage convergence. He noted a link between English proficiency and the rate of wage convergence between immigrants and natives. His results suggest proficiency in host's country language, increases immigrants earnings because bilingualism opens up employment opportunities. Another interesting result noted in this paper is that about 90% of decline in educational attainment and relative wage across relative successive waves of immigrants after 1960 were as a result of change in national origin mix of immigrants. Furthermore, he noted immigration flow is negatively selected (getting lower

skilled immigrants) when the host country taxes high-income workers and provides better insurance for low-income workers. He's results and a summary of other results shown in his paper on the impact of number of immigrants in locality on native wages, provides evidence that in labor markets where more immigrants tend to reside, natives wages is slightly lower (a decline of about 2%). Also Borjas in looking at the impact of immigration on welfare noted that by 1990, the fraction of immigrant households on welfare was 1.7% higher than the fraction of natives on welfare. Also by 1990, 8.3% of newly arrived immigrant household received public assistance compared to 7.4% of native households. Moreover he noted that overtime, welfare participation increased for a specific set of immigrant. This phenomenon could imply that immigrant households slowly *assimilate into welfare*. That is immigrants avoid welfare initially to reduce chances of being refused naturalization, and then exploit the system to the maximum once immigrants become citizens. In contrast to the U.S, Baker and Benjamin (1993) provided evidence that immigrant to Canada have a lower probability of participating in welfare programs only 7.4% compared to natives (9.5%). However, his results provide evidence that immigrants in Canada like their counter parts in the U.S assimilate into the welfare system over time.

However, as noted by Borjas, looking at all immigrants together might not give the best understanding of the issues as welfare participation among immigrants from various counties differs significantly. In the paper earlier mentioned, he indicate that refugee immigrants and those from Mexico tend to be more welfare dependent (about 50% for refugees and 12% for Mexicans) while, immigrants from UK and most countries in Africa (non-refugee) were not. Only about 2-4% was shown to be welfare dependent.

4.0 The costs and benefits of the D.V program to the U.S

Based on the detailed description of the DV program and the literature in general, one can list some possible costs and benefits of this program.

4.1 Possible benefits and arguments for the diversity program

1. It achieves its objective of increasing diversity by excluding countries from the lottery with high immigration rates to the US in the last five years.
2. Its cost of administration is much lower than the point system for many reasons. First, as the applications for different regions are sent to different addresses in a designated consular in the U.S and as the consular choice is rotated from year to year, administrative costs are cut down and new workers don't have to be hired for this purpose. Also, since the general application period is restricted to a month and

computers are used to randomly choose winners for each region, costs are drastically reduced. Finally in the participating countries, because the number of hours needed to review the winner's applications and interview them is not so high in most embassies and can be added to workers present duties, new workers do not have to be hired in the embassies for this program. Besides, this reviews and interviews go on for about a year after visas are won ensuring that excessive work does not necessitate the need for extra staffing.

3. By setting criteria of minimum of secondary education or vocational training, these immigrants who enter the U.S might import some free human capital.
4. Even though some economists have shown that immigrants earn less than natives do; yet working immigrants via the lottery still generate income for the U.S.
5. Borjas (1994) provided evidence that high welfare participation (over 8%) by immigrants leads to tax burden on natives. However, as most of the countries eligible for the D.V program fall under countries with lower welfare participation apart from Cambodia and Laos with exorbitantly high welfare dependency, then immigrants via the D.V lottery may likely not lead to tax burden on natives. Furthermore, it is worth noting that over the past six years of the D.V program, most countries with high visa allocations are not among countries with high participation rates in welfare in the US.
6. Another benefit noted by some authors against the popular belief that immigrants are a burden to the U.S is that immigrants make a net contribution to social security. This claim is based on the fact that a lot of immigrants return to their home countries to retire without receiving social security. Hence, there exists a high possibility for immigrants through the DV program (especially those from Africa and the Middle East who form a large portion of those who gain entrance through this policy), to contribute to social security and not claim it. However, it is important to note on an average, immigrants start contributing later than natives (age 30) to social security.

4.2 Potential costs of the diversity visa lottery

In this section, we outline the programs numerous possible costs to the US. We divide costs into two categories: direct and indirect costs.

Indirect and administrative costs: The assumption above on the possible minimal costs of running the policy hinges on inefficiency in all embassies pre DV program. Hence, consular workers here and abroad had a lot of idle time that could be allocated to running the lottery, reviewing winning applications and running interviews. Even if we

assume this is true, other administrative costs of program like stationery and postage exist. Without the assumption on the inefficiency of the consular and existence of idle labor in the embassies pre the DV program, the wages and compensations of all those involved in the program would be an indirect cost.

Direct welfare impacts on natives: In recent year there have been a lot of complaints by natives claiming negative impacts of immigrants on their welfare⁶. Lamm (2001) provided evidence of a 44 percent loss in wages among American workers with a high school diploma or less attributable to competition from immigrants. This is because many immigrants are willing to accept lower wages than natives are. Thus the D.V program non strict eligibility requirement could exacerbates this welfare losses by increasing the potential number of low level labor willing to accept lower wages than natives in the U.S.⁷

Direct welfare costs in the US: There are so many indirect effects of immigration already on the US and the diversity visa program could easily make this effects more pronounced. For example Brimelow (2000) noted that arguments over the economic consequences of the current inflow was looked into by the National Academy of Science's 1997 report "The New Americans," which was designed to establish the consensus among labor economists. The report found that the post-1965 inflow had in aggregate brought essentially no net benefit to Americans (perhaps \$1-\$10 billion in a \$7 trillion economy). In fact the inflow was imposing a significant fiscal cost (perhaps \$20 billion annually). The basic reason for this shocking result: they claim was the paradoxical bias towards less skilled immigrants. Hence, a program like the D.V lottery with its minimum restriction on education can worsen this impact. The programs arbitrary choice of immigrants rather than labor with specifically needed skills can easily lead to new immigrants that quickly become extra costs to an already over burdened system. According to Borjas 1994, in the early 90s, immigrants were already contributing more to welfare expenditure than their share of the population. Moreover their share of non-welfare income (real income) was much less than their welfare expenditure. Based on the setup of the diversity lottery, this program is more likely to increase these ratios than to improve them.

⁷ It is important to note as highlighted earlier in the paper, that other papers have shown negligible effect of immigrants on labor markets.

An argument against this might be that welfare reforms made in 1996 would reduce immigrant's access to welfare. However, Camarota (2003) noted that general welfare use rebounded in the late 1990s after declining post the reform with 23 % of immigrant households using welfare compared to 15% percent of native households in 2001.

Tax Incidence

Closely tied to the welfare costs highlighted above, is the direct costs puts on natives as natives have to involuntarily through increased taxes sponsor government programs. For example, Table 1 from Borjas 1994 shows that even if exorbitant tax rates were assumed like 30% and 40% in 1990, the tax revenue collected from immigrants for the purpose of welfare programs would not cover the amount of money immigrants spend on welfare. This is because there is evidence of an earnings gap of 23 percent between immigrants and native-born and nearly 40 percent of immigrants fall into the bottom quintile of wage earners. Hence, more low or average skilled immigrants, as is highly possible through the DV lottery, could likely heighten an already existing tax burden on natives.

Table 1

Accounting of welfare expenditure and taxes paid by immigrant household in 1990 (in billions of dollars)	Tax rates	
	30%	40%
1 Cash benefits received by immigrant household (698,071 households x \$5363)	\$3.70	\$3.70
2 Dollar value of benefits from means-tested programs received by immigrants households (13.1% of 181.3 billion)	\$23.80	\$33.80
3 Non-welfare income received by immigrant households	\$284.70	\$284.70
4 Taxes paid by immigrant households	\$85.40	\$113.90
5 Taxes allocated to means tested entitlement programs (8.9% of total taxes paid)	\$7.60	\$10.10
6 Fiscal burden on Native Taxpayers imposed by immigrant household	\$16.20	\$13.70

Source: Borjas (1994) based on public use sample of the us census

Public service costs

Although immigrants pay taxes and thus contribute to the provision of public services, yet quite a number of immigrants get involved in crime and thus increases costs for criminal justice. Luiton and Tanton (1993) systematic study shows that 20% of inmates

are non-citizens and taking into consideration the fact that some of the 80% citizens were once immigrants, then the proportion of non-native inmates would be significantly more than 20%⁸. A program like the D. V with its minimal restriction and lottery system, could increase the probability of getting “*lemon immigrants*” with a potential of increasing public service cost.

Discontent, Adverse selection and Fraud

Finally, Vaughan (1997) noted that consular corps, (openly) grudgingly administers the program and an internal audit recently conducted by State characterized the visa lottery as a costly poorly funded mandate that saps personnel resources. She also noted that recent reports warn that more resources must be devoted to the program, not only to address the increased workload, but also to help fight fraud, which has emerged as a serious problem.

State department records indicate that in some countries, diversity visa fraud has become the most troublesome immigrant visa problem and that in general, refusal rates are higher for diversity visas than for any other immigrant visa category. The worst case of this problem is in Nigeria. Here, four out of five diversity winners’ applications are denied visas mostly due to fraud. As stated by the author, *this prevalence of fraud is a logical consequence, of a program that invites applications from almost anyone, and only requires them to show they qualify after they are selected, prompting a mad rush for documents once the winners are notified.*

The final potential cost of the program is adverse selection. Here I refer to a situation when the asymmetric information between the consular officers and the potential immigrants discourages the skilled immigrant type from applying (like the case of the lemons in used car sale). This is because highly skilled immigrants are aware that officers cannot differentiate them from low or average skilled immigrants and would rather not waste time applying since their skills do not improve their chances of winning. Moreover, these skilled immigrants have higher reservation wage and outside options and would always find jobs in their home countries unlike their counterpart. The result of this would be a worse application pool over time.

⁸ Richard D. Lamm (2000) results show 25% of inmates are foreign born

5.0 The point system costs and benefits

5.1 Benefits of the point system

The point system has many advantages over the lottery system:

- First, yearly immigrants through the system is not fixed like the D.V but rather the total number of immigrants via all immigration categories is set each year by the government in advance in consultation with interested parties such as provinces. Based on needs, visas slots are assigned to different immigration classes.
- The program has an inherent mechanism through which the government can control the occupational composition of incoming immigrants. Thus, the government theoretically has complete control over the number who enters in each occupation.
- The skill-based point system performs a useful function: by attempting to select those immigrants who best serve the national interest and restricting the entry of persons who are "too old" or "too unskilled" or "doing the wrong kind of job". The point system attempts to match immigrant skills with labor market needs. The policy distributes immigration department expenditure across source countries differently. More money is spent on advertising and processing applications in high average skill countries. The result is that in 2002 for example, 27% of immigrant flows entering Canada were from Europe while only 10.4% of U.S inflows were from Europe. In short the policy is geared towards receiving a more skilled inflow to avert the fiscal burden that immigration could place on the host country's system of social assistance.
- Borjas (1994) and Green (1995) comparing the point system to immigration in the US, noted the point system attracted a more educated immigrant flow on average into Canada than America (on average 1 year more).

5.2 Disadvantages and Costs of the point system

Even though the point system looks much better than the present D.V lottery, it still has some flaws.

Administrative cost: The cost of administration of the point system has been noted to be very high and there is not much empirical evidence that immigrants to the US on average earn less income than their Canadian counterparts. Hence, the costs if this program could easily outweigh its benefits. Besides, there is evidence that wage growth in the US is twice as large as in Canada for immigrants. This might indicate the inefficiency of the point system or the other immigration methods into Canada are so poor that on average, wage rates for immigrants grow really slowly.

Indirect Costs: Another possible disadvantage of the program, which could be an advantage depending on the condition is that the immigrants from the point system are

determined as the residual slot. As said earlier, the number of immigrant each year is fixed and highest priority is given for family and refugee class immigrants who are not screened. Implying that in a year when this number is high, the independent immigrants through the point system would be a very small residual. (Green and Green 1995) provide evidence that fixing immigrants each year has led to immigration to Canada being dominated by refugees and family based visas, which are not screened, making the number of potential immigrants from the point system few. They noted this has had a negative effect on the inflow of skills.

Beside this disadvantage, a point system has many imperfections. Government bureaucrats must decide which characteristics will enter the admissions formula, which occupations are the ones that are most beneficial, which age groups are to be favored, how many points to grant each desired characteristic, and so on. The point system also emphasizes easily observable characteristics in the admissions formula — such as age, education, experience, and occupation. These characteristics help determine economic opportunities, but they are not the only things that matter. Because the point system must inevitably rely on characteristics that are easy to measure, it misses those intangibles that are often the main determinants of what makes some workers successful and some not.

Despite these imperfections, the point system has shown a lot of success in Australia and Canada.

Adverse selection:

Adverse selection is a common phenomenon of imperfect information. As mentioned earlier with respect to the D.V program, embassy staffs have imperfect information about potential immigrants but have an objective to grant visas to potential immigrants who have appropriate skills and meet point requirement. Hence, people can easily reconstitute themselves to meet the eligibility requirement especially in developing countries with high incidence of fraud and bribery. Furthermore, the existence of a black market in some developing countries for certificates make the adverse selection problem more pronounced. This potential adverse selection effect might be why Borjas (1993) and Duleep and Regrets (1992) noted that in comparison to the U.S, there is little difference in average skill or wage of the immigrant to Canada for a given national origin group. However, Baker and Benjamin (1993) provide evidence of lower participation rates of immigrants in welfare programs in Canada (7.4% to 9.4% for natives) though their results do not provide evidence that the point system reduces expenditure in welfare programs.

6.0 Cost/benefit evaluation of the D.V lottery and point system under varying scenarios.

In the above section, we highlighted potential costs and benefits of both the D.V lottery program and the point system. We can deduce from this qualitative analysis of cost and benefits, that it might be quite hard to know categorically which of these policies is better or worse for the economy of the U.S due to the diversity in costs and benefits both explicit and implicit. In this section, we attempt to estimate the net benefit or cost from implementing a diversity or point program in the U.S under different simple scenarios. Making use of simple cost/benefit techniques, we highlight under what conditions each policy is dominant.

To make things simple, we would make a lot of assumption about costs. Some based on the facts from the data on the diversity visa lottery and the point system and others just to simplifying assumptions. The results of the next few sections of the paper are in no way a total accounting or economic cost of the programs but could provide insight for evaluating these policies.

General Assumptions

Suppose U.S government G has an objective to maximize natives' welfare/economic growth. Suppose that in year X, government G has an added goal to increase diversity. To achieve this added objective, government G decided to get X immigrants from countries with low immigration to the U.S. To achieve this objective, government decides to admit 50,000 immigrants from different parts of the world. Hence $X= 50,000$ immigrants. We also assume government G has a portfolio of options or policy program \mathbb{Z} to get these potential immigrants *such that* $\mathbb{Z} \supset \{ \theta_1 \theta_2 \dots \theta_n \}$ *where* θ_i *is a policy option* .

As noted earlier, government G has a greater goal to maximize its society's indirect welfare function $V(\gamma, \theta_i)$ by picking a policy θ_i with the highest net gain for citizens. This means that ideally, the government should restrict itself to policies that maintains natives' indirect utility function at pre-policy levels or increases it. Therefore $V(\gamma, \mathbb{C}(\theta_i)) \geq V(\gamma)$ where γ are other factor affecting society welfare functions and $\mathbb{C}(\theta_i)$ is the net cost or benefit of policy i to society. If $\mathbb{C}(\theta_i) > 0$ the program has net benefit and if $\mathbb{C}(\theta_i) < 0$ the program has a net burden or fiscal cost and ideally should not be considered.

Assumption on asymmetric information

We assume that there are two possible kinds of immigrants Ω and $\bar{\Omega}$. Where Ω are unskilled, low skilled or lazy immigrants, who would become a burden on the society and $\bar{\Omega}$ are skilled or good immigrants that would have a positive impact on society.

If we suppose the government policy choice set has only two possible policy choices $\theta_1 = d$ and $\theta_2 = P$. Where P is a point system and d is the diversity lottery. Also, suppose these programs follow the procedures highlighted in the earlier parts of the paper (2.2-2.4) unless otherwise stated.

Trivially, in a world of perfect information policy P is set up with a mechanism to avoid immigrant type Ω totally while policy d 's mechanism only avoiding immigrant type Ω partially because of its simple eligibility criteria and lottery methodology. However, we live in a world of asymmetric information and so both policies have to deal with a problem of hidden information. For the rest of the paper, we want to evaluate both policies under different scenarios. Some of these scenarios are a close replica of both programs in reality while others are not. To demonstrate this, we would make use of simple cost/benefit techniques and make a few simplifying assumptions.

6.1 Cases where the Point system dominates the D.V lottery

Assumptions:

- All the general assumptions highlighted in 6.0 above hold.
- The government G wants to project the net fiscal impact for each policy program if used to achieve set out objective of diversity increase.
- Assume the existence of a black market for certificates and fake documents outside the U.S. Hence, type Ω can disguise as type $\bar{\Omega}$ by buying fake certificates or documents.
- Assume that the total number of potential applicant for each program is J and the proportion of type Ω is M and type $\bar{\Omega}$ is N
- Assume bad type that gain entrance via either programs on an average cause a net fiscal burden B on the society over lifetime by depending on welfare, increasing crime and so on. While every good type that gain entrance creates a net surplus S to the US over their lifetime.
- B and S are the direct fiscal cost /benefits of bad and good type immigrants in terms of present value.
- $M \geq N$ and $M + N = 1$
- Assume both policy programs are administered for only one year each.
- Welfare is measured in monetary terms and changes in natives welfare is measured by net cost or benefit of policy. If policy has a net total cost, natives' welfare falls, as

they have to pay extra taxes to finance this while if the policy has net surplus citizens enjoy the transfers.

Facts from programs we would be using in our model

- There are on average *5 million* applicants for the visa lottery each year.
- Between *80,000* to *100,000* win the lottery.
- Thus we can assume $J = 5 \text{ million}$ and $X = 50,000 = 0.01J$.

We further assume that $K = 60,000$ ($0.012J$). Where K = number who apply for immigration visas among those who win the lottery.⁹

Assumption about administration of program

- Suppose we assume that it takes 30 minutes for the D.V program workers to interview each lottery winner, decide whether to grant visa and do all paper work.
- For the point system we assume it takes one hour to do everything for applicants who are chosen to receive the visa. For all other applicants, to review their file and information and all other things pertaining to the application takes 30 minutes.
- Assume consular staffs are paid w dollars per hour for this new duty for either program.
- Assume consular staff cannot differentiate between both types and have to guess on who is a good or a bad type. Hence, the probability of a good type being granted a visa is equal to their share in the population of applicants being interviewed for visas.
- We assume all other administrative costs are the same for both program d and P . Let's call this cost \bar{c} .
- We assume there are no implicit benefits or cost of the policy programs.

Case one:

Assumptions based on facts about application fees

- Once applicant wins the lottery, to apply for visa issuance, applicant pays $\$Y$ and for lottery winners who are granted visa issuance, he or she pays V extra dollars. Therefore direct revenue for the government via the D.V lottery would be

$$\mathfrak{R}_d = \$Y \cdot K + \$V \cdot X .$$

- To apply for the point program, a possible immigrant pays $\$F$. If visa is granted, immigrant pays $\$L$ before entrance. Therefore direct revenue to government is

$$\mathfrak{R}_p = \$F \cdot J + \$L \cdot X$$

⁹ We know from information about the lottery that not all that win applies for visa. Some plain cannot afford it, others cannot be contacted and others have lost interest in immigrating to the US.

- We assume present fees (converted to U.S dollars) paid for processing in both programs, highlighted in the early part of the paper : $Y \approx 5 \cdot L/13$, $V \approx L/10$ and $F \approx L/2$

With this assumption, the total benefit or cost of each program can be defined as:

$$\mathbb{C}(\theta_p) = \mathfrak{R}_p - \frac{w}{2}(J - X) - w \cdot X - \bar{c} - [0.01J(M \cdot B - N \cdot S)] \quad (1a)$$

$$\mathbb{C}(\theta_d) = \mathfrak{R}_d - \frac{w}{2}X - \bar{c} - [0.01J(M \cdot B - N \cdot S)] \quad (2a)$$

Where $\frac{w}{2}(J - X) - w \cdot X - \bar{c}$ is the **indirect cost of the program** P and

$[0.01J \cdot (M \cdot B - N \cdot S)]$ is the **direct fiscal cost of the programs**.

If $\mathbb{C}(\theta_i) \geq 0$ then immigration policy was a success or causes no explicit fiscal burden on natives. If $\mathbb{C}(\theta_i) < 0$ then immigration would create a burden on the citizens of the country.

- To simplify things, we further assume $B = S$. This implies that the average burden of the bad immigrant to societies' welfare over their lifetime is equal to the average surplus created by the good type.

We can infer from this assumption that if there were equal numbers of the good type of immigrant and bad type of immigrants, that is $M = N$, then there would be no direct program effects. The reason being that the good type immigrants, bears tax burden of bad immigrants and hence $XS(M - N) = 0$. However, if $M > N$ then

$XS(M - N) > 0$ and a potential tax burden exists on the society.

Proposition: Based on the assumptions above, the point system of Canada, if directly replicated in the U.S, would always dominate the D.V lottery.

Estimating the net social cost or benefit of a one year DV lottery program, maintaining assumption $X = 0.01J$, $K = 0.012J$ and $B = S$ would be:

$$\mathbb{C}(\theta_d) = Y \cdot 0.012J + V \cdot 0.01J - \bar{c} - \frac{0.01J}{2}w - [0.01J \cdot S(M - N)] \quad (2b)$$

using $V \approx L/3$, $Y \approx 5 \cdot L/13$ and assuming a \$20¹⁰ dollar per hour wage

¹⁰ This estimate is based on actual salaries paid to consular officers see <http://www.careers.state.gov/officer/foreignservice/>

$$\mathbb{C}(\theta_d) = \frac{5 \cdot L}{13} 0.012J + \frac{L \cdot 0.01J}{10} - \bar{c} - \frac{0.01J}{2} 20 - [0.01J \cdot S(M - N)] \quad (2c)$$

Similarly, for the point system applied to the U.S and with the same assumptions as above,

$$\mathbb{C}(\theta_p) = F \cdot J + L \cdot 0.01J - \bar{c} - \frac{(J - X) \cdot w}{2} - 0.01J \cdot w - [0.01J \cdot S(M - N)] \quad (1b)$$

Using $F \approx L/2$ and same wage of 20 dollars per hour for embassy staff working on this program,

$$\mathbb{C}(\theta_p) = \frac{L \cdot J}{2} + L \cdot 0.01J - \bar{c} - 10(J - 0.01J) - 20 \cdot 0.01J - [0.01J \cdot S(M - N)] \quad (1c)$$

Comparing this two programs costs and inserting the approximate value of L which is \$680 into equation 1c and 2c results in:

$$\mathbb{C}(\theta_d) = 3.1J + 0.68J - \bar{c} - 0.1J - [0.01J \cdot S(M - N)] \quad (2d)$$

$$\mathbb{C}(\theta_p) = 340J + 6.8J - \bar{c} - 9.99J - 0.2J - [0.01J \cdot S(M - N)] \quad (1d)$$

Comparing equation 2d and 1d having in mind $J =$ five million, it is clear that

$$\mathbb{C}(\theta_p) \geq \mathbb{C}(\theta_d) \text{ given any value of } J, S, M \text{ and } N. \text{ Implying that with the above}$$

assumptions, a point system used by the U.S would dominate the D.V program in terms of positive welfare effects on natives. It is important to note that the above inference does not indicate if either policy would create a surplus. That is we have not checked

whether $\mathbb{C}(\theta_p) \& \mathbb{C}(\theta_d) \geq 0$ or not. Hence, if we computing the net difference between revenues and costs, inserting values for M, \bar{c}, N and S , we can derives the net total surplus or cost of the program.

6.2 Problems with case one

The problem with the analysis in case one is that it assumes the same number of people applies for both programs. We assumed $J =$ five million for both programs which is definitely not compatible with reality. We do know from the data, that the number of applicant for the D.V lottery are about 5 million but it is impossible for the same number of people to apply for the point based program, if run just as it is in Canada. The possible deterrent for a lot of immigrants both good and bad types from this program if run exactly as it is run now in Canada are highlighted below.

It is important to note that the rich in countries with potential immigrants have less incentive to immigrate. It is the poor, middle class and criminals whose opportunity cost

of leaving is low, who really want to immigrate. However, a lot of this poor cannot afford to pay the fees needed for the point system.

First a \$340 application fee per application is mandatory without any guarantee of being granted the visa even if one qualifies or is eligible based on having the minimum required points. Recall that the visa officer makes the final decision to grant visas or not even if all other eligibility requirements are met. Moreover, even after being approved for the immigration visa, a landing fee of \$680 needs to be paid. Finally after paying the above fees, to get into Canada, these immigrants must show proof of ability to support themselves for up to six months after arrival.

Hence, investing over 300 dollars for something very uncertain would deter a lot of potential immigrants who are risk averse, cannot afford this expenses nor show proof of thousands of dollars to support themselves upon arrival. However, as there is no fee payment before individuals win in the D.V lottery, the poor can apply. In Canada presently, between 100,000- 250,000 apply for the independent visa yearly via the point system and each year between 40,00- 60,000 are granted the visa.¹¹ These applicants are much less than five million who apply for the D.V lottery although demand for Canadian and American visas differ, though not substantially.

Case Two

To verify whether taking this valid restriction into consideration would change the results, we still maintain most previous assumptions. However, we assume there are only 100,000 ($J/50$) applicants for the point program, maintaining the assumption that $X=50,000$ are granted the visa.

Then we can rewrite the net benefit function as:

$$\mathbb{C}(\theta_p) = 340 \frac{J}{50} + 6.8J - \bar{c} - 10 \cdot J (0.02 - 0.01) - 20 \cdot 0.01J - [0.01J \cdot S(M - N)] \quad (3a)$$

Which is equal to :

$$\mathbb{C}(\theta_p) = 6.8J + 6.8J - \bar{c} - 0.1J - 0.2J - [0.01J \cdot S(M - N)] \quad (3b)$$

Once again, comparing equation (3b) with the net benefit of the diversity program in equation (2d) yields the same inference that $\mathbb{C}(\theta_p) \geq \mathbb{C}(\theta_d)$ hence the point system still dominates. This result confirms the original proposition that a direct replica of the point system in the US would be better than the D.V lottery. It is possible to conclude from these two cases that the D.V lottery is inefficient and the point system is a superior

¹¹ This does not mean all other applicants are turned down. The Canadian process is continuous and there is usually a backlog of applicants not yet reviewed. About 100,000 might be considered yearly.

program. However, the relevant question is that are there any scenarios where the D.V program would be better? The answer is yes.

6.3 Scenario where the D.V program would dominate a point system.

The point program as its run presently in Canada differs from the D.V lottery. This is because; no country is exempted from applying for the program unlike under the D.V program. Recently, statistics from the CIC (Citizens and Immigration Canada) show that the highest proportions of immigrants to Canada are from Asia and Europe.

Furthermore, a higher proportion of Asian immigrants has been noted to be from countries like China and India and for European immigrant, a high proportion are from United Kingdom. These countries are exempted from the D.V lottery for strategic reasons of achieving program objective. Looking at the data from the CIC, one cannot help note the disproportionately low number of immigrants from Africa. It is clear that the large cost of immigration to Canada deters a lot of potential Africa immigrants, who presently constitute about half of the immigrants via the D.V lottery. The bottom line is that if the goal of this policy is to increase diversity, a replica of the Canadian point system for the US might not achieve this.

Hence let us assume the following:

- Suppose to ensure the goal of diversity being achieved, the landing fee (L) is removed but application cost are maintained at old level but only charged to those who would be granted visas.
- All other assumptions remain as in case two in which demand for the point system is 100,000.

Then the net benefit of policy P would be:

$$\mathbb{C}(\theta_p) = 3.5J - \bar{c} - 0.1J - 0.2J - [0.01J \cdot S(M - N)] \quad (4a)$$

While the net benefit of the D.V lottery is still the same:

$$\mathbb{C}(\theta_d) = 3.1J + 0.68J - \bar{c} - 0.1J - [0.01J \cdot S(M - N)] \quad (2d)$$

The above equations can be reduced to $\mathbb{C}(\theta_p) = 3.2J - \bar{c} - [0.01J \cdot S(M - N)]$ and

$$\mathbb{C}(\theta_d) = 3.68J - \bar{c} - [0.01J \cdot S(M - N)]$$

In this case where we assume only a 350 dollars fee for all granted the visa, and removed the landing fee to ensure diversity of applicants, $\mathbb{C}(\theta_d) \geq \mathbb{C}(\theta_p)$. Furthermore, if we do not maintain the assumption of 100,000 applicants as in **case two** since demand would

increase above this level, the net benefit gap between the programs would increase. This holds because we assumed that no fees are paid until visa is granted, hence demand increases. However, demand would still not rival the D.V lottery because of various eligibility criteria, which characterizes the point system. For example, as outlined in section 2.3-2.4, points are allocated based on several criteria. Hence, even if the bad type can disguise as the good type, it would be costly to pay for several disguises to meet all criteria. Besides, there is still a 50-50 chance of being granted the visa by the interviewer. Furthermore, proving support for 6 months before entry would still deter applicants. In short, demand would be less than five million but definitely greater than 100,000.

Let's consider this scenario. Suppose that based on the reduction in cost of application, the applicants for a point-based system in the U.S rises to one million. Then net benefit or cost of point program summarized would be:

$$\mathbb{C}(\theta_p) = 1.3J - \bar{c} - [0.01J \cdot S(M - N)] \quad (4b)$$

Hence, cost from the program would be much higher than previous case in equation (4a) while revenue remains the same. This would amount to the diversity program dominating by an even higher margin- $\mathbb{C}(\theta_d) \geq \mathbb{C}(\theta_p) \geq \mathbb{C}(\theta_p)$. From these results we can conclude that the point systems strength in terms of higher positive welfare impacts is in its fees. This fees not only provides revenue to the government but also serves as a deterrent to excess applicants. Once these criteria are removed from the program, the DV program would be a superior alternative to a point like system. However, a direct replica of the point system in the U.S, clearly is better than the DV program.

It is important to note that in a world with no hidden information, hence no market for certificates, the point system would clearly be better than the D.V lottery. As mentioned earlier, its non-random process, procedure and strict criteria would curb entry of the bad type immigrant who pose a potential fiscal burden to the country. Unfortunately, the D.V program in this world, because of its random process and minimum eligibility would still be a potential haven for immigrants who could pose a potential fiscal burden.

6.4 Program evaluation: Benefit or Cost

In the above simple analysis, we just compared both policies trying to find out under what conditions each is better or dominates. However, we have not shown whether both or either program could yield a net benefit or a cost. To determine this, we need to also estimate the direct impact of these immigrants on the U.S in terms of being a fiscal burden or creating a surplus. Recall that we assume that $S=B$, meaning that on average, the present value of the burden of the bad immigrant is equal to the present value of the net surplus created by the good type. Hence, the direct fiscal impacts of the program

would depend on the proportions of the good and bad type. We would now evaluate these policies under different assumptions on distribution of bad and good type immigrants. Through out this analysis, we would maintain the general assumptions highlighted in 6.1 but with the adjustment made in case two with respect to applicant demand for the point system.

Scenario 1

If we maintain our assumption that $B=S$ and assume an equal proportion of bad and good type in the population then $0.01S(M - N) = 0$. Hence, we can simplify equation 3b and 2d as follows: $\mathbb{C}(\theta_p) = 13.3J - \bar{c}$ and $\mathbb{C}(\theta_d) = 3.68J - \bar{c}$. This result implies approximately that unless the administrative cost \bar{c} of running the policy is more than 67 million dollars a year, the point program would yield a net monetary gain. Also for the diversity program, unless the administrative cost is more than 18.4 million dollars per year, the policy yields net gains.

Scenario 2

Although in our main assumption we maintain that $M \geq N$, however if $M < N$ and $B=S$ then trivially the programs would not exact any direct fiscal burden but a direct fiscal surplus. In this case, whether or not the policy programs exert a total fiscal cost or benefit would depend on if $\bar{c} - X \cdot S(M - N)$ is negative or positive. If it is negative then $\mathbb{C}(\theta_p) = 13.2J - \bar{c} - [0.01J \cdot S(M - N)] > 0$ and the policy has a net benefit. If positive $\mathbb{C}(\theta_p) = 13.2J - \bar{c} - [0.01J \cdot S(M - N)] < 0$ and the policy creates a fiscal burden. The same results apply for policy d .

Scenario 3

If we assume that $M > N$ and also maintain that $B=S$, then

$X \cdot S(M - N) = 0.01J \cdot S(M - N) > 0$. As we know $J=$ five million, the potential direct welfare cost is $50000 \cdot S(M - N)$. We now attempt to compute what this cost would be with different proportions of bad and good type immigrants.

Example one

- Assume $M=2/3$ and $N=1/3$.
- Further assume that the average Mexican illegal immigrant is a good representative of low skilled immigration types. Based on estimates developed by the National Academy of Sciences for immigrants at arrival as stated in (Camarota 2001), the

lifetime fiscal impact (taxes paid minus services used) for the average adult Mexican immigrant is a negative \$55,200.

- We implicitly assume based on this finding that good immigrants create a surplus of \$55,200.

In this case, $50000 \cdot S(M - N) = \$920 \text{ million}$. Inserting this amount into equation (3b)

and (2d) it is easy to verify that $0 > C(\theta_p) \geq C(\theta_d)$ even without estimating the fixed costs. Implying that both programs would have a large fiscal burden on the U.S

Example two

If we assume a smaller difference in proportions for immigrant types than above, for example assume $M = 8/15$ and $N = 7/15$.

Also maintaining the assumption on monetary burden of bad type immigrants as above, the direct fiscal cost of policy would be $50000 \cdot S(M - N) = \$184 \text{ million}$ which is still substantially larger than benefits but the net cost of either program in example two is less than example one. Simulating the net policy effect for different values of M and N , would show that as $M \& N \rightarrow 1/2$ from opposite directions, the direct burden/ cost of policy $\rightarrow 0$. Therefore, in a world where $S=B$ and there is inability to differentiate bad from good type, the proportion of bad and good type would play an important role in determining if the program would be a net fiscal surplus or burden.

In all the above cases, we have assumed $S=B$. This means that on an average, the present value of burden to society of a bad immigrant is equal on average to the present value of surplus created by a good immigrant. However, studies seem to provide evidence against this. These studies are probably valid since the level of actual education or skill differs among people and affects B & S . Depending on if $B > S$ or $(S > B)$, the effects in examples one and two would be exacerbated (attenuated). In a recent study by the National Academy of Sciences highlighted in Camarota (2003), they estimated the impact of different categories of immigrants on the U.S noting the following: Immigrants with below a high school education, cost the country \$90,000 net over their lifetimes. Those with the equivalent of a high school education, cost the United States \$30,000. Immigrants with a college education or more brought a net benefit to the nation of \$100,000. By this calculation, over the course of a decade, the lifetime opportunity cost of admitting 500,000 high school graduates rather than the same number of college graduates would be \$65 billion. This result further confirms that B is not equal to S . However, if we assume that the low skilled type immigrants fall into the first category (immigrants with less than high school education) and the good type into the third

(college graduates) then assuming $B \approx S$ in our above analysis, is a relatively fair approximation.

With all the above evaluations, it is easy to see that both programs might yield a significant net burden to natives. It is therefore of importance to design another policy with a mechanisms that would deal with the many problems of this two programs and under all conditions, would create a net fiscal benefit to the society.

7.0 Designing an alternative

An immigration policy that serves the national interest would be one that admits people whose presence in the U.S is likely to create economic benefit and opportunity for Americans and who have the ability to adapt most easily to the culture and language of their new country. Unfortunately, there are a limited number of people who would like to be immigrants to the United States who meet these criteria. It is therefore of importance to design immigration policy carefully.

In a world without asymmetric information, there would be no problem of adverse selection and moral hazard and a point process for immigration might be efficient and best among all alternatives. However, in a world of asymmetric information, we have to design a policy in such a way that there is proper targeting and we end up meeting our objectives. In the case of these policies, the goal is to increase diversity at minimum cost and the task is to get 50,000 immigrants per year from countries with low immigration to the U.S. To design this policy appropriately we have to take into consideration the following constraints.

1. There are bad type immigrants who want to disguise as good type and as a market for certificates exist in some countries, it would be impossible to differentiate the good from the bad type immigrant based solely on documentation
2. As natives do not want the policy to have an incidence on them in terms of taxes, thus minimum cost both in terms of man-hour invested in the program and administrative costs is key. In addition, designing an alternative policy ensuring sustainability is necessary. Hence, the program must generate enough revenue to take care of its administrative and indirect costs. This confirms the need to charge fees to potential applicants.
3. Diversity is the most important objective of this policy and so to avoid poor targeting, policy should be set up to maximize revenue subject to diversity being achieved.

With these constraints in mind, we attempt to combine the strengths of both the points and the present D.V lottery in designing an alternative that would be superior to both. First we highlight the procedure for this new policy. Let's call it policy *W*.

7.1 Procedure of policy W

- As with the diversity program, we maintain a one-month application bracket yearly as a cost minimizing measures for policy *W*.
 - We also maintain the sending of applications from different regions to different consular addresses as a way to minimize burden of program on any office. Furthermore, the rotating of the program among different immigration offices within the country is maintained as it is also cost and burden attenuating.
 - In policy *W* we raise the eligibility requirement to college education as a minimum.
 - We maintain the criteria on eligible applicants based on countries to ensure diversity objective is achieved.
 - In this new policy, applicants must state fully qualifications when applying, unlike in the present lottery where application only includes bio-data like name, age, sex and passport photographs in application.
 - Fixed visa allocations for different regions based on the prevalence of immigrants from that part of the world in the U.S is maintained. This implies that regions with lowest immigration rates to the US have highest allocations.
 - A lottery is done in the different location as an effective reduction in manpower cost but this lottery differs from the way the D.V is designed presently.
1. For proposed policy *W*, each year, program officers note college degrees and professions with highest unemployment rate in the U.S and secretly decide not to consider applicants with such college degrees/ qualifications or profession.
 2. They also note the professions with greatest demand in the US with an aim of giving preference to those in that profession winning the lottery when lottery winners apply for the resident visa.
 3. A few months before the month of application for the program,¹² the immigration services announce the eligible countries for the *W* lottery and the minimum education eligibility criteria, which is higher education. All other application criteria in the present lottery like only one application per person, signature, passport photographs and so on are maintained. Also, all qualifications must be stated with application. They also state explicitly that not all applicants may be considered in the lottery because each year the program organizers exclude applicants with qualification with excess supply in the U.S. However this college degree/profession qualification would not be disclosed as they varies from year to year. As there is no cost of application, it is legal for the organizers not to disclose the yearly excluded professions. In the announcement for the program, a note is made, that honesty in

¹² This month of application has been changing first March then October presently December.

stating qualification would not be compromised and all educational qualifications would be verified if applicant wins the lottery. Furthermore, any application with any discrepancies or not satisfying application criteria would be disqualified immediately.

4. Once applicants are received in all centers, as the applications are screened presently to meet the D.V programs present criteria, the applications would be screened and all applications not meeting policy W's criteria and also belongings to professions or holding qualifications in excess supply in the U.S would be trashed.
5. All other applications would be numbered and the lottery conducted as it is done presently and the 80,000 winners chosen. All winners would be notified via mail as is done presently.
6. In this new policy, as with the present lottery, a letter of invitation to apply for the visa would state specifically that the immigration visa is not guaranteed and preference would be given to applicants with professions/ qualification with greater demand in the U.S. Also as is done presently under the D.V program, applicants can apply for the visa within a stipulated period including all necessary documents. However, a three-month rather than a one-year bracket after results are released, would be stipulated for applications. With a similar nonrefundable fee of 260 dollars. The notification mail would state explicitly that all documents submitted with application for visa must coincide with previously stated information in application for the lottery or applicant would be disqualified. Furthermore, higher education validity would be verified from institutions.
7. Once all lottery-winning applicants are received in each consular, applicant's qualifications on original lottery application would be compared to documents submitted. Any applicant with differences is disqualified immediately. For remaining applicants, higher education is verified by calling up the institutions or certificates are compared with previously collecting prototype of authentic certificates from colleges. However, this step would depend on the country in question. For most countries in Europe, this would not be necessary because of the well-regulated institution. While this check would be mandatory in most developing countries especially in Africa and Asia.
8. It is important to note that that the law regulating this program stipulates that no one country must be allocated more than 7% (3500) of the visas each year. Hence, after the weeding out process described above, if remaining applicants for the visa in the country are less than or equal to 3500, all applicants would be issued the visas once they have paid the \$65 dollars visa fee.
9. If credible applicants in a country are more than the stipulated maximum allocation other criteria would be used. Visas would be granted first to applicants whose

qualifications are among the professions ranked as having a high current demand in the U.S. For the remaining applicants who possibly might be more than remaining visa slots in some African and Middle Eastern countries, the remaining spots would be allocated based on a bidding process. This way, the applicants who are willing to pay the highest price get the remaining slots and the extra revenue goes to the US. Applicants are told to send in their secret bid, on the maximum they are willing to pay to get the visas. After which all-bidding applicants would be collated and the highest bidding applicants win the remaining visa slots. Finally these candidates would pay the bid amount and the 65 dollars visa issuance fee. This bidding procedure and all other procedures would be highlighted in the notification of winning the lottery so applicants are well aware before paying \$260 dollars.

7.2 Why the *W* immigration policy would be effective

The first question anyone reading the proposed policy above might ask is why policy *W* is superior to the present D.V and the point system.

- First, it is superior to the point system because it would achieve the goal of diversity better than the point system could because of the point systems exorbitant fees and financial eligibility criteria. These costs would serve as a deterrent to the poor in most of the countries the lottery attracts immigrants from.
- Second, the point system is plagued with a weak mechanism design unlike this policy. It's several criteria makes it possible for a bad type immigrant to qualify by creating several avenues through which he can acquire points to qualify. For example even if a bad type is not able to buy a university certificate, he still gets quite a number of points for secondary education, which he can fake easily and is difficult to verify. Also, he can still make up his points via other criteria like adaptive capability, which he can disguise, family ties which is commonly faked with the help of friends etc. Hence, the point system's design creates loopholes that can be exploited by bad type immigrants.
- On the other hand, the *W* program's mechanism design can not only deters the bad type immigrant from applying but also prevents adverse selection. The fact that higher education is the minimum criteria makes it harder for the bad type to disguise as a good type. This is because it is much harder to fake a university certificate than a secondary certificate. Besides, even if applicant can get the necessary fake certificate at an exorbitant price, it is no guarantee of eligibility as some applicants would be disqualified yearly based on profession/qualification, which is not disclosed by the program office. This implies that while it cost the good immigrant nothing to apply with their true credentials, it would cost the bad type a

lot because he does not know whether the credentials he paid so much for might not be eligible. Hence, incurring cost without being sure he would be able to get a chance at the lottery is high which would deter a lot of bad type immigrant. Also, the program's education orientation drive would encourage a lot of skilled applicants to participate at no initial cost. Furthermore, the bad type immigrant do not stand a chance even if they win the lottery and apply, as all educational credentials would be verified from higher institutions. So for a bad type, paying the 260 dollars applicants' fee only to be detected would be no option.

- Stating of qualification when initial applications are sent, emphasizing strict program mode of conduct plus the short gap after winning to apply for the visa both create more roadblock to discourage the bad type from attempting to masquerade as a good type. While in reverse, these strict measures would encourage skilled immigrants who would gain more interest in the program.
- Furthermore, the program *W* would deal with one of the problems of the diversity program, which is its minimal eligibility requirement that can lead to bad type immigrants creating a fiscal burden. First, proof of secondary education or two years work experience can easily be falsified, unlike proof of higher education, which is, much harder to forge in most countries as the higher educational system is highly regulated. Moreover, there are not too many higher institutions in most of these developing countries where the market for certificates exist and credentials from higher education especially university and polytechnics can be more easily verified for authenticity unlike secondary education, which is so rampant and diverse. Due to the above, a market for higher education certificates would not thrive, and demand would be low. More so as the probability of being caught is high and penalty severe¹³. Second, most studies have shown, immigrants with higher education create a surplus to the economy while those without create a fiscal burden on an average. Implying the proposed policy focusing on immigrants with higher education would be revenue generating for the U.S.
- The elimination of higher institution graduates in some fields with low demand in the US and giving priority to some professions with higher demand in the U.S, furthers serves as a backup or buffer. These measures can ensure immigrants would not be a burden on the system but rather create a surplus.

¹³ An exception would be countries with very high corruption in Africa where a market for all certificates exist though high priced. The only solution here would be to verify qualifications and accept applicants from only institutions where credentials could be verified.

- Maintaining most of the cost minimizing administrative procedures as in the D.V program like using a lottery and rotating functions between immigration offices in the U.S keep the new policy at low cost.
- Policy *W*'s revenue is at least as high as those of the D.V program which is sustainable in most embassies. Thus, this program should be sustainable in terms of revenue minus indirect costs. Also, its revenue could be much higher than the diversity lottery with the addition of potential income from the bidding process.

In short policy **W** is designed to attract only the skilled with priority for professions needed in the US. Its mechanism design is such that it can to a large extent keep out the bad type immigrant by making the process too costly, uncertain and risky for potential bad immigrants to reconstitute themselves. It also deals with the problem of adverse selection, which is one of the most serious problems plaguing the other policies.

7.3 Showing that Policy **W** dominates

Recalling the environment described in 6.0-6.4, we want to compare the previous policies to the proposed policy *W* assuming it is implemented in the US. We make the following assumption:

- Applications for the *W* policy program lottery are less than the D.V lottery. A drop to 2.5 million from five million due to changes in eligibility criteria to minimum of higher education so number of applicant *P* is equal to $J/2$.
- Due to the cost of acquiring a fake university certificate and uncertainty about whether qualification chosen would be eligible, the number of bad type immigrant applicants drops to 5% of total applicants. This implies that $M = 0.05$ and $N = 0.95$.
- We assume the remaining bad type applicants have a college degree but are lazy and do not like to work and ultimately would become a burden on the system. They are qualified theoretically but are lazy enough to become a burden on society.
- We maintain similar assumption for the D.V program that in the *W* program 80,000 win the lottery but only 60,000 apply for visas.
- We assume verifying higher education of lottery winning applicants' increases time spent by officers per applicant. We assume one hour for the 50,000 applicants finally issued the visa and 30minutes for the 10,000 applicants who get refused.

7.4 Comparing scenario one to the **W** program:

Recall that in scenario one in 6.4, we assumed $B=S$ and the proportion of bad immigrant is equal to the number of good immigrants in the other two programs. Then recall the net fiscal burden for the point system is $C(\theta_p) = 13.3J - \bar{c}$ and for the D.V program

costs $\mathbb{C}(\theta_d) = 3.68J - \bar{c}$. If we estimate the proposed W program under the assumptions in 7.3, maintaining the value of L and J as previously stated, the total fiscal impact of policy W can be written as equation 7a, which can be reduced to equation 7b. In which $\xi \geq 0$ is the total revenue gotten from the bidding process.

$$\mathbb{C}(\theta_w) = \frac{5 \cdot L}{13} \cdot \frac{0.024J}{2} + \frac{L \cdot 0.02J}{10 \cdot 2} + \xi - \bar{c} - \frac{0.004J}{4} 20 - \frac{0.02J}{2} 20 - \left[\frac{0.02J}{2} \cdot S(0.05 - 0.95) \right] \quad (7a)$$

$$\mathbb{C}(\theta_w) = 3.1J + 0.68J + \xi - \bar{c} - 0.02J - 0.2J - \left[0.01J \cdot S(0.05 - 0.95) \right] \quad (7b)$$

If we assume $S = \$55,200$ as used in scenario one example one,

$\mathbb{C}(\theta_w) = 3.56J + \xi - \bar{c} + 2.4 \text{ billion}$. If we make a reasonable assumption that the general administrative cost of the program yearly $\bar{c} \leq \$100,000$. Then for sure all three programs would yield a net fiscal surplus but the proposed program W 's surplus is much greater than surplus for both policy d and P . Furthermore, if we assumed for S the estimated lifetime fiscal gain from an average immigrant with college education calculated by the academy of science as \$100,000 and assume the lazy immigrant college graduates create similar cost, then $\mathbb{C}(\theta_w) = 3.56J + \xi - \bar{c} + 4.5 \text{ billion}$. Hence we conclude for scenario one that $\mathbb{C}(\theta_w) \geq \mathbb{C}(\theta_w) \geq \mathbb{C}(\theta_p) \geq \mathbb{C}(\theta_d)$.

7.5 Evaluating other scenarios

In section 7.4, we noted that the proposed policy W dominated. We want to argue that similar results would be reached for all other scenarios of program P and d . First, in setting up assumptions for both the point system and the D.V lottery, we assumed that because of the problem of moral hazard $M \geq N$. In the case highlighted in 7.4, $M=N$ and because of the assumption of $B=S$ we have a zero direct effect of policy programs. However, if we assume a scenario such that $M > N$, under the assumption of $B=S$, then the policies would create a direct fiscal burden. This implies that $\mathbb{C}(\theta_p) \& \mathbb{C}(\theta_d)$ under this condition would be less than in scenario one in 7.4 while W would be the same since we fixed M at 0.05 and $N=0.95$. Hence the proposed W program would dominate with a higher margin in this case.

Furthermore, considering the case of $B > S$ with $M \geq N$ for policy d and p , the ranking of programs does not change. We only move to a worse point than scenario one in section 7.4 for all policies. Implying that program W is still the best option in terms of fiscal

benefit. In the same vein, if we assume $S > B$ and $M = N$, then each of the three policies $\mathbb{C}(\theta_i)$'s are higher under these conditions than in scenario one. This is because for both policy d and P in scenario one there was no direct fiscal effect because we assumed $B = S$ and $M = N$. Here however, there is a direct fiscal surplus and net total fiscal benefit rises because $S > B$ as against $S = B$ in scenario one. Net effect on W rises similarly compared to scenario one. In short under this scenario, the three policies are at a higher net total benefit than scenario one but the ranking is still the same and policy W dominates.

Finally, if $S > B$ and $M > N$ for policy P and d , there would be a direct fiscal effect. However, to show if this scenario gives higher net fiscal benefit than scenario one, we need a condition for which we know for sure if this direct effect would be a burden or a

surplus. Solving for this condition, we note that if $M > \frac{S}{B+S}$ then net total fiscal

benefits are lower under this scenario than scenario one implying a direct fiscal burden of this polices under this scenario. Trivially W dominates both P and d with a higher

margin than in scenario one and the case above. However, if $M < \frac{S}{B+S}$ then we have a

direct fiscal surplus for both policy d and P and hence $\mathbb{C}(\theta_i)$'s here are higher for all policies than in scenario one but still the proposed policy program W dominates both programs P and d .

Therefore whichever scenario you consider, the W program would dominate the point program and present D.V lottery program.

8.0 Conclusion:

In this paper, we considered in details the diversity visa program. We then compared it qualitatively in terms of procedure, costs and benefits to another acclaimed better alternative used in Canada: the point system. We noted that in a world of perfect information, the point system would always be a far superior alternative than the diversity lottery. However, we live in world of asymmetric information and corruption and in policy design this incentives must be taken into account. Using simple examples and assuming a world of asymmetric information, we tried to evaluate and compare both policies under different scenarios attempting to provide evidence that under some conditions a point system implemented in the U.S could do worse than the present lottery program. Finally, we proposed a new policy designed to virtually eliminate the granting of immigration visas to bad type. The success of this policy is linked to higher education eligibility requirement, raising the cost reconstitution of bad type immigrants and credible threats. We also implicitly assume that most college graduates as they are

skilled would not become a liability on society. Next, we argued using simple cost/benefit analysis that the proposed program would always do better than both the point and the diversity program.

We however know that these policies in reality entail other costs not captured in these simple exercises. However, our simple evaluation experiment could provide evidence that if the diversity lottery is just changed a little as proposed in the new policy, it could for sure do better than the point system. Therefore altering the mechanism design of the D.V program as proposed in program *W*, focusing on skilled immigrants (those with higher education) would be very useful. The importance of skilled immigrants cannot be over emphasized as skilled immigrant among all immigrants, generate the largest increase in the per-capita income of the native population, earn more, pay higher taxes, and require fewer social services than the unskilled immigrants would. They definitely have a positive impact on the US over time.

In summary, the diversity lottery has its strengths and if its mechanism design is altered to deal with the problem of adverse selection and poor targeting, then it could serve a dual purpose of improving the country's image by increasing diversity and create extra revenue for the U.S government. However, it is important to note that these immigration policies do not exist in isolation they are a wider part of a portfolio of immigration policies. Besides, immigration via this means is minimal compared to other avenues. Hence, it is possible that the government does not consider costs and benefits with respect to separate policies but rather tries to maximize benefits to citizens from all immigration policies.

Possible future extension:

In this paper, we simply just conducted simple evaluation exercises and our results are tied to our assumptions and hidden information. A very interesting possible extension would be to use INS data on immigrants through the diversity lottery to verify if there really is a problem of asymmetric information and adverse selection via the diversity program presently. This analysis could be carried out by looking at data on immigrants via the D.V lottery, in terms of their level of education, their income, occupations in the U.S, unemployment levels, crime rates, dependence on welfare and government programs could be a starting point.

Also some immigration policy analysts claim that the constant conflict to get rid of the program, suggests that the diversity lottery was put in place for political reasons and as

such, the diversity objective was just a camouflage. Hence, trying to uncover the interest groups behind the policy and who gains and loses could also be interesting to model. In conclusion there is room for more econometric investigation of this policy. Especially with regards to testing for not only welfare impacts, but also the presence of significant asymmetric information and political play in the process.

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