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The Impact of Immigration on Financial Markets

Jesse Baker

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Abstract

This paper studies the impact of immigration policy on financial markets. I estimate the cumulative abnormal returns surrounding two events: the effective start date of the Immigration Act of 1990 and the implementation of the Temporary Protected Status (TPS) of Nicaragua and Honduras in 1999. Focusing on agriculture, construction, and manufacturing firms, I find that the CARs surrounding the events are indeed positive and significant, suggesting that the market anticipated growth among industries that are likely to hire Central American immigrants.

Introduction

Since the election of President Trump, immigration policy has become an increasingly central topic in the United States. This debate reached a new high when differences of opinion among policy makers encouraged President Trump to declare a national emergency in order to build a wall across the United States/Mexican border. Although the debate surrounding immigration policy is strong now, immigration has been an ongoing topic in the United States for hundreds of years. Building a wall between the United States and Mexico would not be the first time policy makers have attempted to restrict the flow of immigrants into the country. On May 6, 1882, a federal law called the Chinese Exclusion Act was signed, which excluded the immigration of all Chinese laborers. Immigrants have been a long standing issue in the U.S. as natives fear what the increased competition in the labor force means for them.

There has been significant research dedicated to answering the question of whether immigrants help, or hurt the economy. Often times, there is evidence on both sides of the argument, suggesting that the truth lie somewhere in the middle. One interesting study was focused on the Mariel Boat-lift Crisis, which was a naturally occurring economic phenomenon in which about 125,000 Cubans migrated to Florida. Economist, David Card studied the impact of the Mariel immigrants and found that there was virtually no impact on the wages, or unemployment rates of unskilled workers (Card (1990)). However, further research conducted by George Borjas suggested that the Mariel immigrants caused a 10% to 30% decrease in wages among high school dropouts in Miami (Borjas (2017)). Immigration expert Giovanni Peri later analyzed the effect of the Mariel immigrants using synthetic control and determined that there was no significant difference in wages for Miami workers (Peri and Yasenov (2018)). Indeed, Geoffrey Keeton expressed in the same paper when explaining immigrant migration flows that they increased labor imbalance in some areas, while reducing them in others (Keeton and Newton (2005)).

As shown above, when looking at immigration over time, it is sometimes difficult to determine exactly it effects the economy. The purpose of this paper is to help shed more light on what impact immigration has on the economy. Using event studies surrounding the Immigration Act of 1990 and Temporary Protected Status of Honduras and Nicaragua in 1999, I monitor stock prices of agricultural, construction, and manufacturing firms. Results show that indeed cumulative abnormal returns are positive and significant for various time windows surrounding these events. For the Immigration Act of 1990, three-day CARs are approximately 0.0083 suggesting that, relative to the

market, treated firms (agriculture, construction, and manufacturing) increased about 0.83% during the three-day period surrounding the signing of the Immigration Act. When examining the 1999 TPS order, three-day CARs are approximately 0.0213 suggesting that, relative to the market, treated firms increased about 2.13%. These results are noteworthy, as it shows the immediate unbiased reaction of the market in response to what can be perceived as an increase in immigrant labor. Positive abnormal returns suggest that agricultural, construction, and manufacturing companies would benefit from permitting immigrants to work in the United States legally.

Additionally, I use regression analysis to estimate what forces may be driving the CARs to be positive. The OLS models attempt to determine which, if any of the treated firm types drive the positive and significant CARs. For the immigration act of 1990, construction and manufacturing have positive coefficients of 0.0529 and 0.0147, with construction being slightly significant and manufacturing being insignificant. However, with the 1999 TPS order, construction and manufacturing had coefficients of -0.0240 and 0.0330. Construction being insignificant and manufacturing being slightly significant. These results seem to suggest that, if anything, manufacturing firms are driving the unusually large CARs during the periods surrounding these immigration events.

Immigration Act of 1990 and Temporary Protected Status

On November 29, 1990, the Immigration Act was signed by George H. W. Bush. The new bill increased the number of visas granted to immigrants from 530,000 per year, to 700,000 per year from 1992-1994 and then 675,000 visas per year every year after 1994 (Leiden and Neal (1990)). The new bill effectively increased the number of visas by

over 27% per year. The Immigration Act also describes in great detail different nuances of issuing visas, such as, family-based immigration, employment-based immigration, “diversity” immigration, and etcetera¹.

As part of the Immigration Act of 1990, Title III had a “temporary protected status” clause. The clause grants illegal aliens to have legal residency in the United States for up to eighteen months². The Attorney General must first designate “temporary protected status” to nations that are in the midst of civil conflict, natural disaster, or other extraordinary circumstances that make the alien’s return unsafe (Leiden and Neal (1990)). In order for aliens to qualify for TPS, they must be continually physically present in the United States since the date of the country’s TPS designation (Leiden and Neal (1990)).

These events are particularly interesting to this study, because they provide a natural instance in which I can capture immediate market expectations regarding immigration policy. Since firms that may be at a higher disposition to hire unskilled workers would benefit from an increase in the supply of immigrant labor, it would make sense that these policies would positively impact them.

Data

Using the Center for Research on Security Prices (CRSP) database, I gathered daily stock price data for all publicly traded agricultural, construction, and manufacturing

¹ For a comprehensive report on the Immigration Act, see (Leiden and Neal (1990)).

² TPS can be renewed if unsafe conditions persist (Leiden and Neal (1990)).

firms. Using the CRSP data, I calculate the CARs for each event against the CRSP value-weighted market index, which is the value-weighted mean return of all publicly traded firms available on CRSP.

Additionally, I obtain daily information on stocks such as price, market cap, turnover, volatility, and whether or not the company is on the New York Stock Exchange. Price is the close stock price on the day of the event. Market Cap is the market capitalization on the day of the event. Turnover is the ratio of daily volume (on the event day) scaled by shares outstanding. Volatility is calculated following Alizadeh, Brandt, and Diebold (2002) as the difference between the natural log of the daily high price and the natural log of the daily low price. These variables are used as control variables when I estimate my OLS model to find the driving force of the CARs.

Model

I use two different models in my analysis. The purpose of the first model is to obtain the cumulative abnormal returns (CARs) for the treated firms (agriculture, construction, and manufacturing). I estimate the cumulative abnormal returns first by using the following time series model that spans 209 days before the event date:

$$R_t = \alpha + \beta R_{m,t} + \varepsilon_t$$

From the time series model, we can derive the following model:

$$\varepsilon_t = R_t - \alpha - \beta R_{m,t}$$

I then add up the residuals over the event window, which estimates the returns above the stock market. I used the value weighted index from CRSP as my benchmark which controls for firm size. If the CARs are positive, it suggests that the treated firms outperformed the value weighted index, while negative CARs indicate under-performance compared to the value weighted index.

I estimate $CAR(-10,10)$, $CAR(-5,5)$, $CAR(-3,3)$, $CAR(-2,2)$, $CAR(-1,1)$, and $CAR(0,1)$. $CAR(-10,10)$ estimates returns ten days prior to the event and ten days after, spanning twenty-one days total, since we include the event day at day 0. Every other CAR's event window uses the same approach. For example, $CAR(-5,5)$ estimates returns five days before the event, and five days after, spanning eleven days total. Over every event window that I estimated, I found that all CARs for both the Immigration Act of 1990, and Temporary Protected Status of 1999 were positive.

The second model I use is a simple OLS regression that signals what forces are driving the CARs to be positive. My dependent variables are $CAR(-5,5)$, and $CAR(-1,1)$, which are cumulative abnormal returns over an 11-day and 3-day period. The main independent variables in focus are Construction, Manufacturing, and Agriculture, which are dummy variables that signal if the firm is part of the treated group. I also included the following variables: $\ln(\text{MktCap})$ to control for firm size, Price, Turnover, Volatility and NYSE (whether or not the firm is on the New York Stock Exchange). I included these variables to help control for other factors that could be driving the CARs.

Results

The appendix contains all of my results. Tables 1, and 2 show the summary statistics (mean, standard deviation, 25th percentile, median, and 75th percentile) for all the variables in the sample of the Immigration Act of 1990, and Temporary Protected Status of 1999. The summary statistics are divided into Panels A, B, and C, where Panel A describes the summary statistics for agricultural firms, Panel B describes the summary statistics for construction firms, and Panel C describes the summary statistics for manufacturing firms.

Tables 3, 4, 5, and 6 show the estimated means, medians, t-statistics and sample size for each CAR that I estimated. Table 3 reports the estimated CARs for the average firm surrounding the Immigration Act of 1990. It is noteworthy to point out that all CARs have positive means. CAR(-10,10) has the highest mean of 3.12%, while CAR(-3,3) has the lowest mean of 0.12%. All of the CARs in Table 3 are highly significant, with the exception of CAR(-3,3). The high t-statistics, and positive CARs suggest with high confidence that the abnormal returns are different from zero.

Table 4 is the standard event study for all firms surrounding 1999 TPS. Again, I find that all CARs have positive means. CAR(-10,10) again has the maximum mean of 10.03%, while CAR(0,1) has the minimum mean of 0.68%. All t-statistics are highly significant in this calculation. One explanation as to why the t-statistics are much greater in Table 4 than in Table 3 could come from the larger sample size. Table 4 has over 600 more observations than Table 3. As the sample size increases, the variance of the parameter estimates decreases, giving greater confidence. It is also possible that TPS is a better event, as it occurred more suddenly than the signing of the Immigration Act.

Table 5 shows the estimated CARs by firm type for the Immigration Act of 1990. This time, I only estimate CARs for two different even windows (CAR(-5,5), and CAR(-1,1)). Notice that the sample size varies drastically depending on the firm type. There are only nineteen agricultural firms, and fifty-two construction firms. By contrast, there are a total of 2,341 manufacturing firms. Since the sample size is small for agricultural and construction firms, I am less likely to find significance. However, I still estimate moderate to strong significance for construction and manufacturing firms. For the construction firms, I estimate a mean CAR(-5,5) of 5.88%, while the manufacturing firms mean for CAR(-5,5) is 1.86%.

Table 6 shows the resulting CARs by firm type surrounding 1999 TPS. Again, there are few agricultural, and construction firms, making it difficult to have significance in the t-statistics. However, CAR(-5,5) and CAR(-1,1) for manufacturing firms have large, and statistically significant means of 9.35%, and 2.20% respectively.

In Table 7, I estimate an OLS regression using cross-sectional data to try and determine what variables are driving the CARs surrounding the Immigration Act of 1990. My dependent variables are CAR(-5,5), and CAR(-1,1). The independent variables of focus are Construction, and Manufacturing. Construction and Manufacturing are dummy variables used to estimate how firm type may impact the dependent variable. I have also included Ln(MktCap), Price, Turnover, Volatility, and NYSE as control variables. Little can be said about this model. While Construction and Manufacturing have positive coefficients, they are not statistically significant. The models carry little significance as well, with adjusted R^2 of 0.0014 and -0.0001.

In Table 8, I repeat the methodology used in Table 7. However, this time I am using regression analysis to find what factors are driving the CARs surrounding 1999 TPS. Again, the coefficients for Construction and Manufacturing are insignificant. Although, the OLS models to show greater significance with adjusted R^2 of 0.1190 and 0.1373.

In Figure 1, I show the CARs for both the Immigration Act of 1990 and 1999 TPS. The y-axis represents the value of the CAR, and the x-axis represents how many days before, or after day zero i.e. the event date. Figure 1 clearly illustrates that the CARs tend to be more positive around the event date.

Conclusion

This research adds to an already prolific field of study. While there has been extensive research done in the scope of immigration, to my knowledge, there has never been any research done on the impact that immigration policy has on financial markets. The models I develop yield interesting results, but are subject to limitations.

One limitation of my analysis is the ambiguity of what impact the Immigration Act of 1990 and 1999 TPS had on the actual economy. Intuitively, one may be able to deduce that since agricultural, construction, and manufacturing firms benefited from these policies, there was a spillover effect in the economy, the likes of which benefited others. However, this is not explicitly shown in the models.

There are trading strategies that can be implemented from my findings. For example, if you anticipate temporary protected status to be designated to countries that

are similar to Honduras, and Nicaragua, you could invest in manufacturing, or construction companies. Based on my findings in Figure 1, an ideal time to short the shares would be sometime within a five day window of the event. This strategy could also cross over to other immigration related policies that would increase the supply of laborers from Central and South American countries. However, there is still risk in this strategy. According to my findings in the OLS regressions, firm type had an insignificant relationship with the CARs. Additionally, when looking at Figure 1, the combined firms from the Immigration Act of 1990 and 1999 TPS, there are several days in which the abnormal returns are negative.

In spite of the shortcomings of the model, the CARs are positive and often significant surrounding the Immigration Act of 1990 and 1999 TPS. Even though prices are often random, and unpredictable, there is a potential strategy in anticipating abnormal returns surrounding immigration policy. Market expectations, which should be unbiased and rational, seem to believe that increasing the supply of immigrant labor, positively impacts agricultural, construction, and manufacturing companies.

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Appendix

Table 1 - Summary Statistics - 1990 Immigration Act

Panel A. Agriculture						
	Mean	Standard Dev.	25th Percentile	Median	75th Percentile	
MktCap	223664134	351239009	4910390.63	61182000	301197500	
Price	12.8594	12.3845	2.0000	6.0000	20.0000	
Volatility	0.0870	0.1328	0.0063	0.0333	0.1335	
Turn	0.0013	0.0020	0.00008	0.0006	0.0021	
Spread	0.0974	0.0923	0.0333	0.0426	0.1500	
Illiq	20.4059	46.2276	0.0044	0.9415	4.4444	
NYSE	0.2105	0.4189	0	0	0	
Panel B. Construction Firms						
MktCap	117924147	426839871	7023500	24646250	70956375	
Price	6.4979	8.4646	0.8125	3.7969	9.3125	
Volatility	0.1369	0.2364	0.0232	0.0531	0.1186	
Turn	0.0013	0.0015	0.00009	0.0005	0.0022	
Spread	0.0931	0.0644	0.0371	0.0931	0.1184	
Illiq	14.9921	58.7009	0	0.0809	3.2186	
NYSE	0.3269	0.4737	0	0	1.0000	
Panel C. Manufacturing Firms						
MktCap	610389587	3220663922	6396000	23548875	136181500	
Price	11.1383	16.1199	1.3750	5.0000	14.2500	
Volatility	0.1165	0.1859	0.0180	0.0488	0.1335	
Turn	0.0025	0.0069	0.0001	0.0008	0.0025	
Spread	0.0962	0.1045	0.0309	0.0645	0.1201	
Illiq	61.7940	2125.33	0	0.0229	1.1204	
NYSE	0.2554	0.4362	0	0	1.0000	

Table 2 - Summary Statistics - 1999 TPS (Nicaragua/Honduras)

Panel A. Agriculture						
	Mean	Standard Dev.	25th Percentile	Median	75th Percentile	
MktCap	258835601	579862575	31511500	82558000	165752125	
Price	11.0106	9.6171	4.6250	8.7500	14.7500	
Volatility	0.0758	0.0823	0.0212	0.0408	0.1015	
Turn	0.0042	0.0066	0.0002	0.0007	0.0045	
Spread	0.0626	0.0571	0.0211	0.0386	0.1333	
Illiq	0.4435	0.7868	0.0038	0.0629	0.6754	
NYSE	0.1600	0.3742	0	0	0	
Panel B. Construction Firms						
MktCap	343169906	553038436	23275000	104015000	544033875	
Price	13.5687	11.8781	2.7500	8.5000	23.0625	
Volatility	0.0598	0.0609	0.0165	0.0418	0.0870	
Turn	0.0031	0.0062	0.0002	0.0010	0.0040	
Spread	0.0696	0.0803	0.0149	0.0367	0.0885	
Illiq	8.5372	54.5184	0.0046	0.0309	1.2152	
NYSE	0.4366	0.4995	0	0	1.0000	
Panel C. Manufacturing Firms						
MktCap	2044692821	12932657155	28186000	101741500	501120000	
Price	17.4623	24.3509	3.6875	9.8125	23.1250	
Volatility	0.0649	0.0774	0.0229	0.0445	0.0839	
Turn	0.0059	0.0139	0.0008	0.0024	0.0059	
Spread	0.0444	0.0631	0.0125	0.0258	0.0526	
Illiq	3.3826	23.2984	0.0017	0.0344	0.3946	
NYSE	0.3169	0.4654	0	0	1.0000	

Table 5 - Standard Event Study - By Firm Type Around 1990 Act

	Agricultural Firms		Construction Firms		Manufacturing Firms	
	CAR(-5,5)	CAR(-1,1)	CAR(-5,5)	CAR(-1,1)	CAR(-5,5)	CAR(-1,1)
Mean	0.0033	0.0026	0.0588	0.0150	0.0186	0.0080
Median	-0.0092	-0.0166	0.0297	0.0072	0.0102	0.0017
t-statistic	(0.12)	(0.12)	(2.25)	(1.88)	(5.45)	(3.96)
N	19	19	52	52	2341	2341

Table 6 - Standard Event Study - By Firm Type Around 1999 TPS (Nicaragua/Honduras)

	Agricultural Firms		Construction Firms		Manufacturing Firms	
	CAR(-5,5)	CAR(-1,1)	CAR(-5,5)	CAR(-1,1)	CAR(-5,5)	CAR(-1,1)
Mean	0.0400	0.0128	0.0352	0.0090	0.0935	0.0220
Median	-0.0109	-0.0078	0.0144	-0.0129	0.0485	0.0029
t-statistic	(1.10)	(0.52)	(1.52)	(0.53)	(22.19)	(10.04)
N	25	25	71	71	2925	2925

**Table 7 - Cross-Sectional Regressions:
CARs around 1990 Immigration Act**

	CAR(-5,5)		CAR(-1,1)	
Construction	0.0549 (1.91)	0.0529 (1.84)	0.0180 (1.19)	0.0169 (1.12)
Manufacture	0.0147 (1.15)	0.0529 (1.07)	0.0010 (0.13)	0.0014 (0.19)
Ln(MktCap)		0.0002 (0.07)		-0.0007 (-0.50)
Price		-0.0003 (-1.56)		-0.0003 (-2.41)
Turnover		1.0361 (1.70)		0.1548 (0.49)
Volatility		0.0150 (0.45)		-0.0056 (-0.26)
NYSE		0.0099 (1.36)		0.0047 (0.99)
Constant	0.0039 (0.32)	-0.0017 (-0.04)	0.0070 (0.94)	0.0214 (0.99)
Adj. R2	0.0008	0.0014	-0.0002	-0.0001
Robust SEs	Yes	Yes	Yes	Yes
N	2501	2501	2501	2501

**Table 8 - Cross-Sectional Regressions:
CARs around 1999 TPS (Nicaragua/Honduras)**

	CAR(-5,5)		CAR(-1,1)	
Construction	-0.0470 (-1.60)	-0.0240 (-0.86)	-0.0032 (-0.16)	0.0066 (0.35)
Manufacture	0.0113 (0.60)	0.0330 (1.82)	0.0098 (0.88)	0.0188 (1.76)
Ln(MktCap)		-0.0145 (-4.29)		-0.0082 (-4.82)
Price		-0.0005 (-2.31)		-0.00004 (-0.46)
Turnover		1.4543 (2.79)		1.2726 (2.73)
Volatility		0.6395 (3.99)		0.4074 (3.50)
NYSE		0.6395 (-0.38)		0.0189 (3.59)
Constant	0.0822 (4.49)	0.2843 (4.49)	0.0122 (1.12)	0.1161 (3.36)
Adj. R2	0.0009	0.1190	-0.0001	0.1373
Robust SEs	Yes	Yes	Yes	Yes
N	3126	3126	3126	3126

Figure 1 - CARs for Immigration Act & TPS

