Finance Research Letters xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Finance Research Letters

journal homepage: www.elsevier.com/locate/frl

Is equity market volatility driven by migration fear?☆

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ARTICLE INFO

Keywords:
Equity markets
Fear
Migration
Terror attacks
Volatility

JEL classification:
F22
G15

ABSTRACT

This paper examines whether a part of the volatility of equity markets can be trace back to migration fear sentiments of investors. In doing so, we use a novel data set of migration fear indexes based on newspaper coverage for the US, Germany, France and the UK. Our results show that – especially for Germany – stock market volatility has been significantly affected by migration fear. This effect is in particular observed for the period around 2015 – the top of the European migrant crisis.

1. Introduction

Among other global problems especially the Syrian war started in 2011 has caused a major movement of refugees around the globe and especially to Europe. In September 2015 Angela Merkel – the German Chancellor – has let thousands of refugees going through Hungary directly to Germany to apply for asylum. This *open-door* refugee policy has been heavily criticized by the right-wing national conservative parties in Germany (especially the AfD) in several of their speeches. This often very populist discussion has been spread through the German media over several months and has raised fear associated with migration in parts of the German population. Similar developments happened in other EU countries such as France and the UK and have played a significant role in the success of the Front National in the presidential elections in France (i.e. Marine Le Pen reached the final ballot) and in the Brexit referendum vote in Great Britain. US president Donald Trump also tried to raise migration fear within the American population in the pre-election period.

The aim of this study is to analyze whether this migration fear that has increased in the latest years in the corresponding countries is a sentiment that also affected investment decisions on equity markets in these countries and resulted in higher volatility of stock prices. To analyze this effect we rely on a migration fear index suggested by Baker et al. (2016) which has been constructed based on newspaper coverage of certain combinations of words referring to migration and fear. A potential migration fear effect might result from prejudices in the population and in particular from equity market investors. Right-wing national conservative parties often connect terror attacks with migration from Middle East countries. Therefore, this study also contributes to the literature which already established the impact of terror attacks on financial and economic variables (see e.g. Arin et al., 2008; Chesney et al., 2011; Shahbaz, 2013; Narayan et al., 2018) and extends this literature strand to a broader context. In addition, a second channel potentially transmitting migration fear into equity prices and affecting their volatility operates through expectations of equity market investors

☆ Thanks for valuable comments are due to an anonymous reviewer.

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https://doi.org/10.1016/j.frl.2018.02.029
Received 28 December 2017; Received in revised form 26 January 2018; Accepted 22 February 2018
1544-6123/

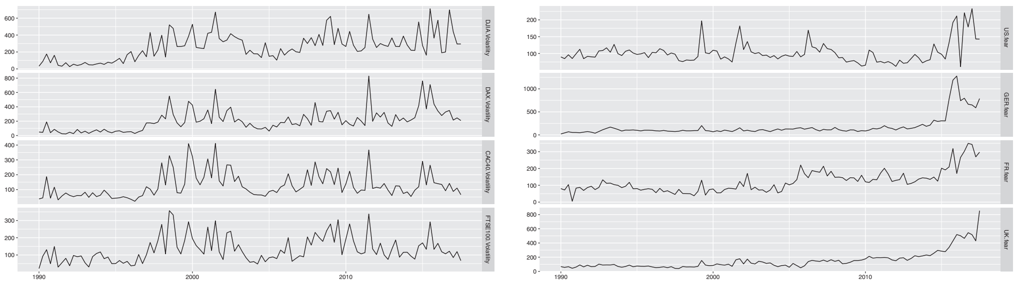

Fig. 1. Equity market volatility and migration fear. The plot provides the realized quarterly volatility of equity prices (left panel) and the migration fear index (right panel) for a quarterly sample period running from 1990Q1 to 2017Q3 for four industrialized economies, i.e. the US, Germany, France and the UK.

about the impact of migration on the labor market and the social security system in the corresponding countries.[1] According to Karolyi (2006) stock prices reflect investors' hopes and fears about the future which might include fear about migration and its potential impact on the economy. Last but not least, this effect might also result from an overreaction to a news shock discussed in the Behavioral Finance literature (see e.g. De Bondt and Thaler, 1985; 1990; Barberis et al., 1998).

The reminder of this paper is organized as follows. The next section provides an overview of the construction of our data set. Section 3 describes our empirical approach and discusses the corresponding results while Section 4 concludes.

2. Data

We rely on data for the migration fear index provided by Baker et al. (2016) at their companion website (http://www.policyuncertainty.com/; see also: http://voxeu.org/article/immigration-fears-and-policy-uncertainty) for a sample period between 1990 and 2017 at a quarterly frequency. The index is available for the US, Germany, France and the UK and is constructed by counting the number of newspaper articles with at least one term from two different set, i.e. migration ("border control", "Schengen", "open borders", "migrant", "migration", "asylum", "refugee", "immigrant", "immigration", "assimilation", "human trafficking") and fear ("anxiety", "panic", "bomb", "fear", "crime", "terror", "worry", "concern", "violent"), and then dividing by the total count of newspaper articles (in the same calendar quarter and country).[2]

In addition, we use daily data for conventional stock market indexes in the corresponding economies, i.e. the US Dow Jones Industrial Average (DJIA), the German DAX, the French CAC40 and the UK FTSE100 taken from Yahoo! Finance. To match the data frequency of the migration fear index, we have computed the realized volatility as the standard deviation of each quarter based on the daily price index. The time series of the realized volatility of equity markets and the migration fear indexes for the four economies under observation are provided in Fig. 1. The plots especially show that migration fear has substantially increased starting in the year 2015 which coincides with higher stock market volatility. This pattern is in particular remarkable for Germany which reached the highest migration fear level in the last quarter of 2015 and the first quarter of 2016. This can be explained by the media reaction to the *open-door* refugee policy of Angela Merkel mentioned in the Introduction.

3. Empirical methodology and findings

To analyze the effect of migration fear sentiments on stock market volatility in the US, Germany, France and the UK, we start by individually regressing quarterly realized equity market volatility on the migration fear index for each country. To get an overall picture, we also run a pooled regression aggregating the whole data set for the four economies. To account for a potential omitted variable bias, we also rely on a fixed effects regression on the whole panel of countries which controls for other potentially unobserved variables that might have been constant over time in the corresponding countries. To test the null hypothesis of no effect we also allow for potential heteroskedasticity and serial correlation in the error terms by using robust standard errors.

Table 1 reports the estimated coefficients for the individual models and the pooled as well as the fixed effects regression together with conventional statistics. The results indicate that while the estimated migration fear effect ($\widehat{\beta}_1$) is insignificant for the US, the French and the UK stock market, it is significantly positive at a 1% level for the German stock market. This shows that the migration fear sentiment is especially relevant for equity market decisions in Germany – the country with the highest levels of migration fear – and significantly increases stock market volatility. When we also account for the first lag of the equity market volatility in the regression model to allow for volatility clustering often observed in financial markets (but less evident here due to the low frequency of our data set), the significance of the effect stays robust although its magnitude decreases.[3] The pooled and especially the fixed effects regression results confirm this finding.

[1] This channel has been discussed by Beckmann and Czudaj (2017a,b) in a broader context by analyzing the effect of uncertainty on the expectations in foreign exchange markets.

[2] The counts are obtained from "Le Monde" for France, "Frankfurter Allgemeine Zeitung" and "Handelsblatt" for Germany, the "Financial Times" and the "Times of London" for the United Kingdom, and US newspapers indexed by the Access World News Newsbank database for the United States.

[3] The corresponding results have been omitted to save space but can be provided upon request.