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Does welcoming refugees attract more migrants? The myth of the "Merkel effect"

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KIEL WORKING PAPER

**Does welcoming
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No. 2194 August 2021

Jasper Tjaden & Tobias Heidland

ABSTRACT

DOES WELCOMING REFUGEES ATTRACT MORE MIGRANTS? THE MYTH OF THE 'MERKEL EFFECT'

Jasper Tjaden, Tobias Heidland

In 2015, German Chancellor Angela Merkel decided to allow over a million asylum seekers to cross the border into Germany. One key concern at the time was that her decision would signal an open-door policy to aspiring migrants worldwide – thus, increasing migration to Germany in the long-term. With the continued global rise in forced displacement, Merkel's decision in 2015 provides a unique case study for the fundamental question of whether welcoming migration policies have sustained effects on migration towards destination countries. We analyze an extensive range of data on migration inflows, intentions, and interest between 2000 and 2020. The results reject the “pull effect” hypothesis while reaffirming states' capacity to adapt to changing contexts and regulate migration.

Keywords: migration, migration policy, asylum and refugee policy, policy signaling, pull effects

JEL classification: F22; F68

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DOES WELCOMING REFUGEES ATTRACT MORE MIGRANTS? THE MYTH OF THE 'MERKEL EFFECT'¹

In September 2021, after sixteen years in office, German Chancellor Angela Merkel will not stand for re-election. While the SARS-CoV-2 pandemic overshadowed her last term in office, one of the defining moments of her legacy was her role in the so-called "EU refugee crisis". On 5 September 2015, Merkel decided to allow thousands of asylum seekers to cross the border into Germany after suspending the Dublin Regulation – an EU regulation restricting migrants' rights to claim asylum to the EU member state they first set foot in. Between 2015 and 2017, Germany received approximately half of all asylum claims submitted across the EU, receiving 1.1 million applications in 2015 alone (Brücker et al., 2019).

Merkel's decision was met with fierce criticism at the time (see Annex 1.1. for more detailed description). One of the key concerns of critics in 2015 was that the "failure" to close Germany's borders to potential refugees would create a "pull effect" by signaling an open-door policy to aspiring migrants worldwide, thus leading to higher levels of subsequent migration to Germany (see Annex 1.2. for details).² The image associated with this was a selfie that Merkel took with a young Iraqi refugee in front of a reception center.³ The selfie was massively circulated on social media and covered in traditional media, becoming an iconic image of Germany's migrant-friendly stance at the time. In light of growing criticisms and the administrative challenge of managing the high number of asylum seekers, Germany severely tightened migration policies in 2016 undergoing a swift restrictive turn.

The German policy in 2015 and 2016 provides a unique case study on states' capacity to regulate migration and the potential effects of both 'open' and 'restrictive' policies (Czaika & Haas, 2013). With the global level of forced displacement continuously on the rise (UNHCR, 2020), the German case study can provide policy lessons regarding the long-term implications of welcoming populations seeking refuge.

¹ Acknowledgements: The authors are grateful for research assistance by Lina Jeannot. The authors would also like to thank Max Schaub and Melanie Radike for valuable feedback on earlier drafts.

² Angeli (2019), Faigle et al. (2016)

³ Köpke (2019)

Whether and how immigration policies impact subsequent migration flows is one of the most debated and long-standing issues in the migration literature (Czaika & Haas, 2013; Freeman, 1994; Hatton, 2020; Massey & Espinosa, 1997). Some scholars argue that restrictive policies such as scaling up border enforcements or limiting the rights of migrants shifts flows instead of reducing them overall (Czaika & Haas, 2013). Others argue that policies in destination countries may affect the cost-benefit calculations potential migrants make when making their decision (Fitzgerald et al., 2014). Policies can increase or decrease the cost of attempting to migrate to a specific destination, reduce or enhance the potential benefit such as employment and wages or make it more or less likely for the benefits to materialize (Fitzgerald et al., 2014).

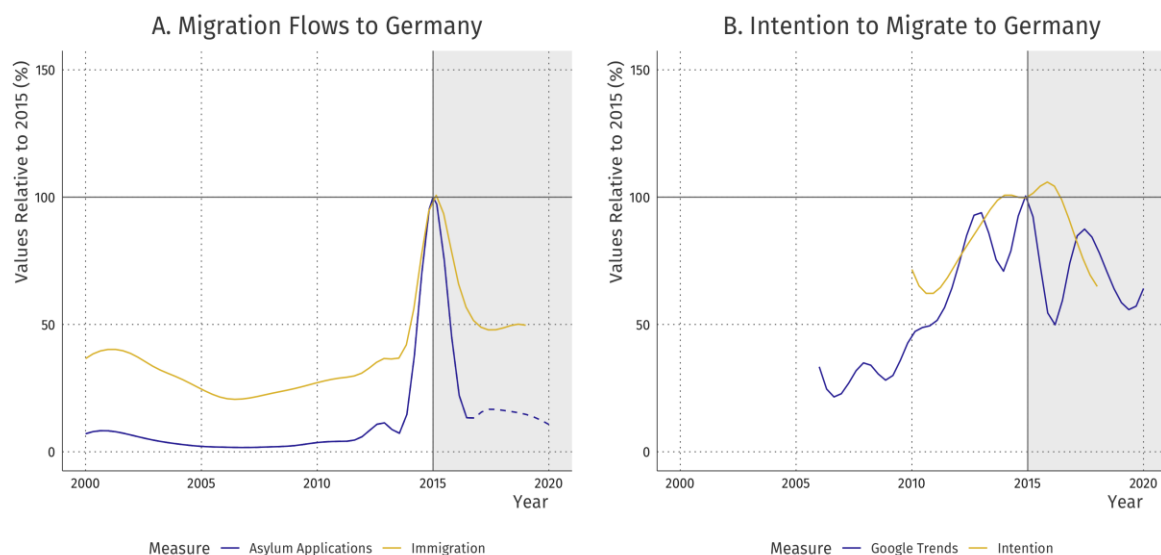
There is limited evidence whether welcoming policies attract more future migration (see Annex 1.3 for detailed review of the evidence). Albeit rarely formulated explicitly, this "pull effect" hypothesis relies on several assumptions. First, changes in migration policies change a priori preferences for another destination country among those migrants who are already considering migration. However, destination choices are largely driven by employment prospects, existing social ties and linguistic proximity (Massey & Espinosa, 1997; Crawley & Hagen-Zanker, 2019). Any policy signal would need to outweigh these factors. Second, migrants are aware of policies in destination countries (Crawley & Hagen-Zanker, 2019; Fitzgerald et al., 2014; Laurentsyeveva & A. Rahim, 2018). While this may be the case for some countries with sizable diaspora communities already present, geographically proximate countries, or those with extensive media coverage and penetration, it is less certain for many of the origin countries of forced and irregular migrants. Third, potential migrants have no budget constraints keeping them from funding costly journeys. However, displacement largely takes place in low-income settings restricting migration options for large segments of society. Fourth, potential migrants disregard subsequent policy changes conflicting with the initial positive signal. This is inconsistent with the second assumption that migrants are aware of relevant policies in destination countries.

This brief reflection on the available theoretical background does not provide clear expectations for the alleged effect of Merkel's 2015 decision. While it is reasonable to expect additional movement towards Germany following her decision to keep borders open, there is also reason to

expect no impact on subsequent flows considering the range of assumption which would need to be met and the restrictive policies which were implemented in 2016.

Based on an extensive range of available sources, we compare the immigration trends to Germany (and other EU destination countries) before and after 2015. First, we report descriptive statistics by destination and origin. Second, we use various econometric approaches (mainly difference-in-difference estimation and event study designs, see Annex 3.2) to test whether 2015 affected migration levels and migration intentions to Germany. In line with the descriptive evidence provided in the main part of the paper, none of these econometric analyses provide evidence that there was an effect of the September 2015 policy signal on migration flows or intentions.

Figure 1: Migration to Germany (% relative to 2015)



Note: See Annex section 2 for a detailed description of data sources and measurements, and Annex section 3 for details on the analysis. Asylum application data is based on EASY registrations (pre-2017) and official asylum applications (post-2017, dashed line) to reflect the number of arrivals in Germany more accurately. See sections 2.2 and 2.3 in the Annex for details.

Figure 1 shows *actual* and *potential* migration to Germany from 2000 to 2020. The lines display the value of each year as a percentage relative to the value in 2015 – the year of Merkel’s famous decision to keep the border open. Panel A shows that immigration flows⁴ in 2000 were less than half compared to its 2015 level and asylum applications approximately 10 percent. We observe a

⁴ Immigration flows reflects the number of foreigners establishing residence in Germany (see Annex 2.1. for details)

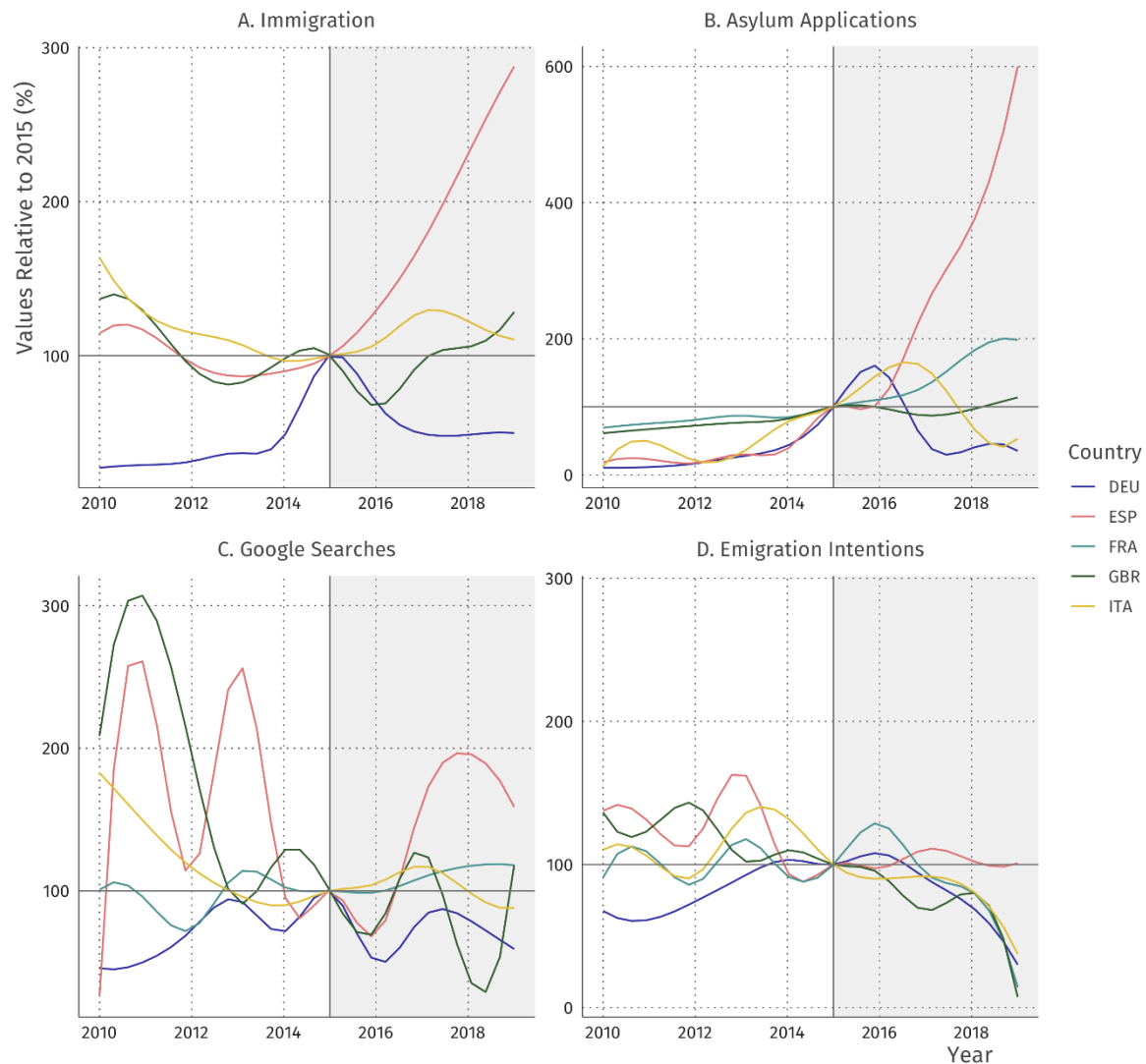
massive increase in the number of immigrants and asylum seekers until 2015 which accelerated in 2010 and 2011 - the year the Syrian civil war started. 2015 appears to be the peak of a trend rather than its inception. After 2015, we observe a sharp decline in immigration and asylum flows to Germany.

Panel B in Figure 1 shows the "potential" migration to Germany over time.⁵ Global potential migration to Germany grew steadily between 2011 and 2014. In 2014, potential migration already reached the level of 2015. The level slightly increased in 2016 to then decrease sizably in the years 2017 and 2018. Concerning the number of individuals who searched for Germany in the context of visa and immigration on Google's online search engine, we observe a downward trend after post-2015 following an almost linear upward trend between 2006 and 2013. These results remain unchanged when restricting the sample to major countries of origin of migrants in Germany.⁶

⁵ Potential migration was measured using aggregated survey data on emigration intentions from 135 countries in the world based on the Gallup World Poll (see Annex 1.6.) and Google Search data capturing internet searches for particular countries in the context of migration (see Annex 1.7). Both sources have limitations that are discussed in each section in the annex.

⁶ For this analysis, we created a list of the largest origin countries in terms of asylum applications and intentions to migrate to Germany (N=45) based on Eurostat, Destatis and Gallup data, see Figure S.2. in the Annex.

Figure 2: Migration to Germany relative to other EU destination countries (% relative to 2015)

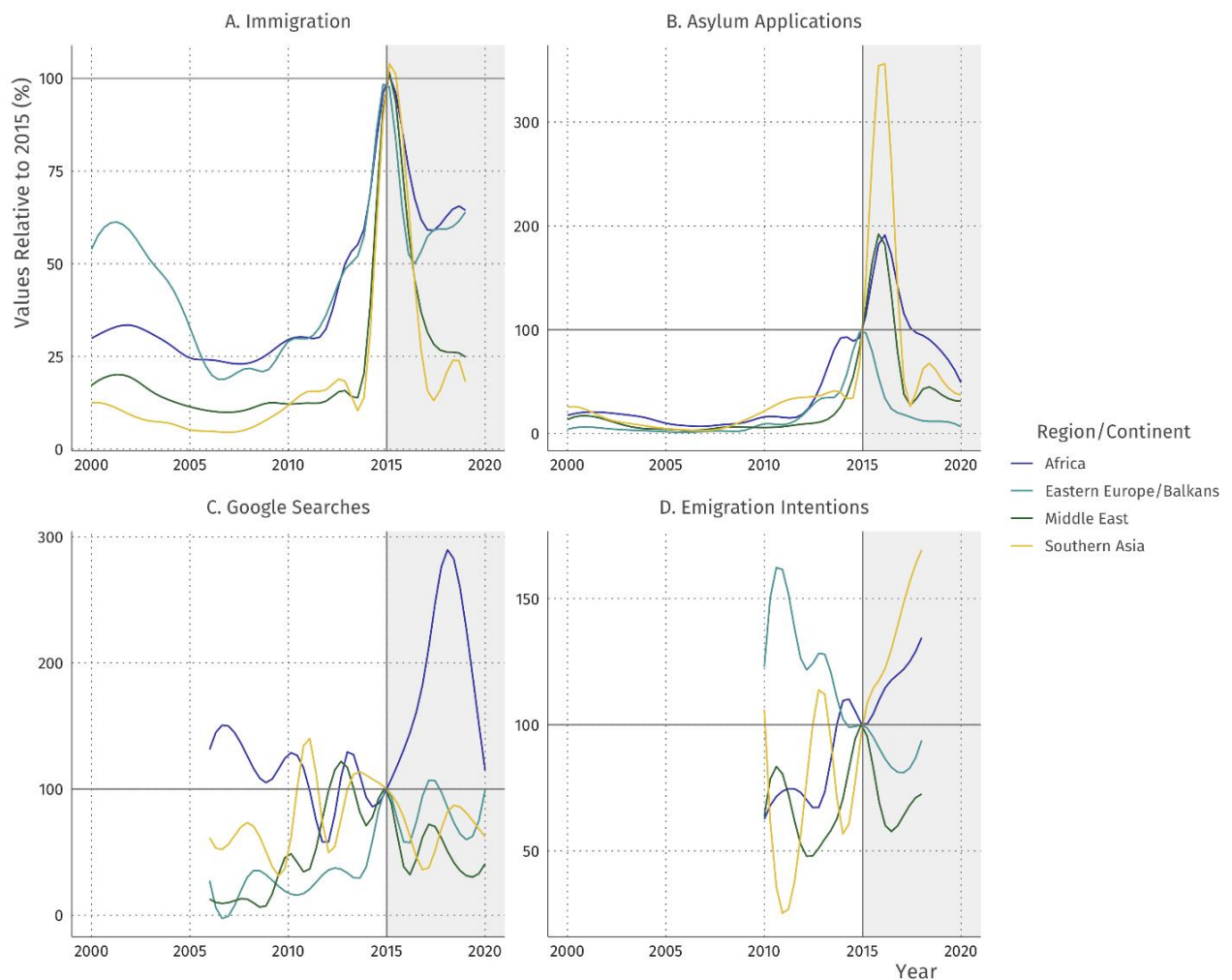


Note: See Annex section 2 for a detailed description of data sources and measurements, and Annex section 3 for details on the analysis.

Another possible expression of the “pull effect” hypothesis is that Germany became a more popular destination relative to other countries (even when migration to Germany itself did not increase). Figure 2 compares trends for Germany with results for Spain, France, the United Kingdom, and Italy – the other major receiving countries in the European Union (EU). None of the migration indicators, including immigration, asylum seekers, intentions, or Google searches, indicate a larger difference between Germany and other destination countries following 2015. On the contrary, the results suggest several increases in Spain, Italy, in France relative to 2015

(depending on the respective indicator) and faster decrease in migration to Germany relative to other EU countries.

Figure 3: Migration to Germany by major sub-regions of origin (% relative to 2015)



Note: See Annex section 2 for a detailed description of data sources and measurements, and Annex section 3 for details on the analysis.

Lastly, Merkel's 2015 decision may have had different effects on certain regions or countries of origins. In principle, the “pull effect” hypothesis applies globally as persons may be attracted to migrate to Germany who reside in countries without any major migration links. However, it may be the case that the “pull effect” is mostly relevant for countries in Africa, the Middle East, or Eastern Europe with existing migration links and potential migrants who are more likely to be subject to Merkel’s policy of allowing asylum seekers to cross the land border. If this is true, heterogeneous “pull effects” on certain regions may be hidden in the aggregate results.

Figure 3 shows migration and potential migration trends disaggregated by key sub-regions in the world. Regarding immigration (A), we observe similar trends compared to the findings at the global level (Figure 1, A). Regarding asylum application (B), we observe a downward trend after 2015 in all sub-regions except for a spike in 2016. It is important to note that the 2016 spike is due to data issues as most recorded asylum applicants in 2016 already entered Germany but were affected by delays in the administrative procedure (see Annex, Section 2.2 and 2.3 for more details). Regarding online searches (C), we do not find evidence of a “pull effect” for any sub-region except Africa which spiked in 2016 and 2017 before dropping sharply in 2018 and 2019.⁷ However, the event study analyses based on a restricted sample of African countries rejects any “pull effect” (see Annex, Section 3.2.5). In terms of intentions to migrate to Germany (D), we observe relative increases in the number of potential migrants wishing to migrate to Germany in Southern Asia (e.g., Afghanistan, Iran, Iraq) and Africa (excluding Southern and Central Africa). However, these increases appear to be a continuation of an upward trend that started as early as 2011 and 2012 (see Annex, Section 2.2.2, Figure S14 for country-level results).

To assess the validity of the trends we observe descriptively, we conduct a difference-in-difference estimation, panel analysis, and an event study analysis of all relevant indicators discussed (see Annex 3.2 for details on design choices, specification, and detailed results). First, panel data analysis based on OECD data reaffirms the absence of any “pull effect” on general migration inflows (net of a range of controls). Second, our difference-in-difference results indicate that there has not been any persistent causal increase in the number of asylum seekers to Germany that can be associated with the September 2015 decision. Further analysis based on event study designs confirms this result and clearly shows that unexpected increases in asylum claims in Germany occurred several years before Merkel's decision. The results also hold when considering additional factors such as network size and violent conflict in origin countries. Even when accounting for the severity of the violent conflict in Syria and the potential network effects created by those already in Germany, our estimation shows that there was no increase in asylum claims after September 2015 compared to other groups. That is remarkable because Syrians should be expected to be the group that received the clearest signal that Germany had adjusted its policy (see Annex

⁷ This may be tied to the December 2016 terrorist attack in Berlin that was perpetrated by a North-African. The event received international attention in the media and politics.

3.2 for details). Third, the results from event study designs on migration intentions and Google searches are in line with the null effect of 2015.

In sum, the findings suggest that Merkel's famous 2015 decision was the culmination of a process which started several years before, rather than being the cause of a “pull effect” that induced a new migration dynamic. In fact, migration sharply fell during the years after 2015. There are several reasons that likely explain this sharp decline. First, Germany took a swift restrictive turn regarding migration policy (see Annex 2.4. for a detailed description of policy changes in Germany and the EU). In this respect, the German case highlights the capacity of states to regulate migration. Second, pressures to flee or move onwards to Europe changed after 2015. Conflict intensity in Syria, Iraq, and Afghanistan decreased compared to the pre-2015 period, and the conditions in refugee camps in neighboring countries improved.⁸ Lastly, the general assumption that most potential migrants in origin countries are well informed about policies in destination countries and have the necessary means to migrate when the opportunity arises appears overstated (see Annex 1.3 for detailed discussion).

The situation in Germany in 2015 appears unique in many ways, yet it bears much similarity to other crises in the world including the displacement of five million Venezuelans and their reception by Latin American countries. With the level of global displacement continuing to be on the rise (UNHCR, 2020), it is important to ask what the German case study can tell us about the broader question of whether and how welcoming migration policies shape subsequent migration trends.

The evidence presented in this study suggests that fears of unmanageable “mass migration” caused by welcoming policy signals are unwarranted. If “pull effects” occur at all, they are likely to be temporary and geographically limited. “Pull effects” do not out-live changing policy contexts and appear to be of minor relevance compared to structural factors such as conflict and economic hardship which motivate individuals to leave their country (Czaika & Haas, 2013; Hatton, 2020; Massey & Espinosa, 1997).

⁸ As early as 2012 and 2013, Médecins sans Frontières and the UNHCR highlighted funding gaps and the resulting deteriorating conditions in refugee camps in the region (see Annex 2.5. for details). After 2015, the funding for refugee reception and hosting in the Middle East was massively scaled up.

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ANNEX

‘Does welcoming refugees attract more migrants?’

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1. Selected literatures

1.1. Discussion of Merkel's decision in 2015

Merkel's 2015 decision to leave the border open to incoming asylum seekers changed the political landscape in Germany, contributing to a sustained presence of a far-right party in the federal and state parliaments for the first time since Nazi Germany was defeated (Bredtmann, 2020; Dinas et al., 2019; Steinmayr, 2021). At the time, the German population was divided over the issue. While the arrival of thousands of migrants at Munich train station was initially met with a large wave of support from civil society organizations and volunteers (Conrad & Aðalsteinsdóttir, 2017; Karakayali, 2018), Angela Merkel faced significant opposition even within her own party and from government bodies such as the Interior Ministry, Federal Police, and Federal Intelligence. The head of Merkel's conservative sister party and coalition member called her decision the 'worst mistake of the decade' and threatened to challenge it in Federal Court of Justice (Alexander, 2018). Merkel's most vocal critics were the PEGIDA movement and the new far-right party 'Alternative for Germany' (AfD). Growing out of a Facebook group, the PEGIDA ('Patriotic Europeans against the Islamisation of the West') quickly attracted thousands of followers to mass demonstrations. This was particularly the case in East Germany, where the AfD is now on the verge of becoming the strongest party in some regional states. Both feed on fears that asylum seekers would pose security threats and change Germany forever by undermining its culture. One key concern at the time was that Merkel's decision would lead to increased and sustained future levels of migration to Germany.

1.2. Mentions of the 'pull effect' claim in the media

The "pull effect" hypothesis - which was sometimes coined the "Merkel effect" - was discussed widely in the media at the time. Leading national media outlets such as 'SPIEGEL' and 'DIE ZEIT' to run stories on it.⁹ It was mentioned in multiple interviews by leading politicians, officials, and experts.

In an interview with a leading German newspaper, Oxford professor Paul Collier, one of the most prominent economists in Europe, described "hundreds of millions of people" searching for a better life who, once set in motion, would cause an unmanageable situation.¹⁰ In the same interview, Collier blamed Merkel's decision for the "refugee crisis" by "inviting" migrants to make their way towards Germany. This view exemplifies the discourse at the time according to which Merkel's decision had contributed to unprecedented and uncontrollable future mass migration to Europe (Asserate et al., 2018). Merkel's own finance minister and party member Wolfgang Schäuble said publicly that "wrong images were sent." Schäuble was quoted saying that "in the countries, where refugees come from and where people contemplate migration, people are asking themselves, 'why do we stay here if we are so welcomed in Germany?'" (Alexander, 2018). The

⁹ Angeli (2019); Faigle et al. (2016)

¹⁰ Zschäpitz (2016)

leader of the Christian-Socialist (CSU) coalition partner, Markus Söder, was quoted stating that “the inflow and the pull effect are noticeably growing. This is starting to exhaust our capacities“.

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1.3. Literature on migration policy effects

The available empirical evidence on the effects of migration policies is limited and mixed (Czaika & Haas, 2013; Haas et al., 2019). While some studies argue that migration policies are largely ineffective (Bhagwati, 2003; Massey et al., 2014; Ryo, 2013), others have shown significant effects of policy changes or general policy openness on subsequent migration flows (Beine et al., 2015; Bratu et al., 2020; Fitzgerald et al., 2014; Haas et al., 2019; Helbing & Leblang, 2019; Neumayer, 2004; Ortega & Peri, 2013).

The lack of understanding and empirical evidence of how policies shape migration has been referred to as the “efficacy” gap, i.e., “the degree to which the implemented laws, regulations, and measures have the intended effect on the volume, timing, direction, and composition of migration flows“ (Czaika & Haas, 2013).

The literature started to distinguish differential effects of different types of policies on different types of flows including visa policies (Czaika & Haas, 2017), quotas (Mayda, 2010), asylum (Brekke et al., 2017; Crawley, 2010; Czaika & Hobolth, 2016), enforcement and undocumented migration (Bertoli & Moraga, 2015; Donato et al., 1992; Massey et al., 2014; Ryo, 2013), and citizenship and integration policies (Fitzgerald et al., 2014), among others.

The mechanisms through which policies may shape flows are mostly implicitly assumed but rarely, with notable exceptions (Fitzgerald et al., 2014; Neumayer, 2004), explicitly discussed.

First, policies may have a direct effect on migration flows through physical and geographic borders and enforcement (e.g., border checks and barriers) that can reduce recorded migration by physically preventing entry. Second, policies may “signal” openness or “restrictiveness” to individuals in origin countries who are contemplating leaving their country before any action has been taken. Such a signal may change potential migrants’ cost-benefit calculation (Fitzgerald et al., 2014) resulting a change in their desired destination country for those already planning to migrate, a change in the desire to migrate altogether or a change in the timing of migration (Holland & Peters, 2020). Policies signaling openness would reduce the (perceived) inherent costs and risks involved in undertaking migration, particularly in the context of irregular and forced migration (Todaro & Maruszko, 1987). It may also signal a welcoming society that is more likely to support migrants after arrival.

As discussed in the main manuscript, the proposed signaling effect of migration policies in destination countries relies on several important assumptions. First, changes in migration policies change a priori preferences for another destination country among those migrants who are already considering migration. However, destination choices are largely driven by employment prospects, existing social ties and linguistic proximity (Massey & Espinosa, 1997). Any policy signal would

¹¹ Neuerer (2015)

need to outweigh these factors. Second, migrants are aware of policies in destination countries (Carlson et al., 2018; Fitzgerald et al., 2014; Laurentsyeve & A. Rahim, 2018; Neumayer, 2004; Tjaden, 2020; Tjaden & Dunsch, 2021). While this may be the case for some countries with sizable diaspora communities already present, geographically proximate countries, or those with extensive media coverage and penetration, it is less certain for many of the origin countries of forced and irregular migrants (Laurentsyeve & A. Rahim, 2018; Tjaden, 2020). Third, potential migrants have no budget constraints keeping them from funding costly journeys. However, displacement largely takes place in low-income settings restricting migration options for large segments of society. Fourth, potential migrants disregard subsequent policy changes conflicting with the initial positive signal. This is inconsistent with the second assumption that migrants are aware of relevant policies in destination countries.

1.4. Restrictive turn in Merkel's migration policy

Already in 2016, Merkel made clear that 2015 was not to be repeated. A series of policies were put into place to curb arrivals in Germany, including, most famously, the EU-Turkey deal. Turkey agreed to vamp up enforcement at the Turkish coast facing Greece in return for monetary compensation for migrants residing in Turkey. In addition, Turkey agreed to take back migrants from Greece in case the asylum claim has been rejected. In return for receiving returned migrants, the EU accepted to resettle asylum seekers directly from Turkish territory. While the agreement was never fully implemented in practice (Alexander, 2018), it may have signaled to migrants that any attempts to migrate towards Germany are in vain. Other German policies aimed at reducing numbers included 1) limiting family reunification entitlements of refugees with subsidiary protection, 2) declaring several countries as “safe countries” of origin to which migrants can be returned using accelerated administrative procedures, 3) large scale funding increases for the European Border Agency (FRONTEX) and 4) large scale funding increases for refugee hosting countries in the Middle East. In addition, several countries along the Balkan route in coordination with Austria de-facto closed their borders.

1.5. Pre-2015 signs of increasing migration pressures

The analysis suggests that the upward trend in migration to Germany started already in 2010 and 2011, long before Merkel's famous decision to keep borders open in 2015. Increasing migration flows to Germany in the early 2010s coincided with reports on worsening conditions in countries hosting large numbers of Syrian migrants, esp. Lebanon, Jordan, and Turkey. Already in 2012, Doctors without Borders reports that Lebanon has cut medical support for refugees due to funding shortages.¹² On 10 April 2013, the UNHCR releases a press entitled “Funding gap threatens refugee response in Lebanon,” warning that “in one month, and with the current

¹² Médecins Sans Frontières (2012)

funding, more than 400,000 Syrian refugees in Lebanon will no longer receive food assistance.”¹³ Additional warnings are issued in July 2014 highlighting reduced food rations, limited health services, and contagious diseases in the absence of funding.¹⁴ In June 2015, the UNHCR stressed that the situation on the ground has resulted in “an increased number of Syrians seeking safety and refuge beyond the region, including by taking often dangerous journeys across the Mediterranean to Europe.”¹⁵ Early in 2015, the UNHCR Lebanon office reports that Lebanon stopped registering Syrian asylum seekers altogether.¹⁶

2. Data sources & variables

The descriptive and multivariate analysis of migration trends towards Germany and comparable destination countries before and after the Merkel announcement to suspend the Dublin regulation (“The Merkel Effect”) is based on a broad range of available data sources largely relying on official statistics from the Government of Germany, on surveys from countries of origin indicating potential migration to Germany (Gallup World Poll) and Google Search Data from countries of origin. In the following, we briefly describe each data source and define the variables used in the analysis in more detail.

2.1. DESTATIS

2.1.1. Description

The migration statistics (‘Wanderungsstatistik’) are official statistics that contain all registrations and de-registrations of moves within Germany, departures to other countries, and arrivals from other countries. This information is processed as part of joint federal statistics and collected by municipal registration offices (Statistisches Bundesamt [Destatis], 2019). The available migration-relevant characteristics are taken from the population registration form. The registration form includes the last residence (excluding address), destination, nationality, year of birth, place of birth, gender, marital status, date of move, and registration date. The Federal Statistical Office (Destatis) reports the migration data to the European Statistical Office (Eurostat), which forms the basis for most of our analysis on asylum trends in the European Union.

¹³ Sleiman (2013)

¹⁴ UNHCR (2014)

¹⁵ Dobbs (2015)

¹⁶ UNHCR Lebanon (2021)

2.1.2. Variables

Immigration or migration inflows („Zuzüge”) are the number of new registrations of established residence in a county („Gemeinde”). Registering with the county where a person lives is required by law in Germany and is used for the population registry. The broad definition applies generally to all individuals regardless of their status and location including internal migrants. In the context of this study, migration inflows refer to foreigners (without a German passport) that register a new residence in Germany.

2.2. BAMF – Asylum claims

2.2.1. Description

The Federal Office publishes 1) monthly data on the number of asylum applications filed in Germany, 2) the ten countries of origin with the highest number of applicants arriving, 3) and statistical data on transfer requests that have been filed in the Dublin Procedure. The statistics also provide information on how the data have developed in comparison to previous years. In accordance with Article 4 of Regulation (EC) NO 862/2007 of the European Parliament and of the Council on Community statistics on migration and international protection, the Federal Office is the national data supplier for the European Commission (Eurostat) in the field of asylum statistics.”¹⁷

2.2.2. Variable

The analysis is based on the number of asylum applications. Asylum applicants are those individuals who have filed for international protection with the Federal Office and whose asylum proceedings are pending and whose case has not yet been decided on. Refugees, in contrast, are individuals who are given refugee protection once their asylum proceedings have been completed. Asylum applications should not be confused with EASY registrations (see next section).

2.3. BAMF – Registrations (EASY System)

2.3.1. Description

If someone submits an asylum application in Germany (at the border or later in Germany), it is first decided in which federal state they must submit their asylum application. This ensures an even distribution of asylum seekers among the federal states. The distribution is carried out by the so-called EASY system, an IT application for the distribution of protection seekers to the federal states. EASY stands for "Initial Distribution of Asylum Seekers" („Erstverteilung der Asylbegehrenden”). All asylum seekers are therefore registered in the EASY system before they travel on to their destination federal state. There they must go to the initial reception centre that is assigned to them via EASY. There they can file their formal asylum application at the branch

¹⁷ BAMF - Bundesamt für Migration und Flüchtlinge (2021b)

office of the Federal Office for Migration and Refugees (BAMF). After this application, they are formally registered as asylum applicants in the Central Register of Foreigners (AZR).¹⁸

In 2015, several weeks or months passed between the distribution via the EASY system and the filing of the asylum application due to large numbers of arrivals. This was because the persons concerned had to wait so long for their appointment to file an asylum application because of the high number of protection seekers.

One important issue is that the EASY system does not store personal data. Therefore, it was possible that the same persons were recorded several times in EASY. This is the case, for example, when protection seekers travelled independently to other federal states and registered there again. In addition, many people who were registered in EASY did not apply for asylum in Germany because they moved on to other EU countries to seek protection there. Therefore, in 2015, the number of EASY registrations was significantly higher than the number of asylum applications.

2.3.2. Variable

EASY registrations reflect the number of protection seekers who have arrived in Germany and registered with the Federal Office for Migration and Refugees (BAMF). This variable should not be confused with asylum applications. Asylum applications reflect the number of protection seekers who have formally filed for asylum in the region that they have been allocated to (based on the list of previous registrations in the EASY system). For the years 2015 and 2016, the EASY data more accurately reflects arrivals in Germany compared to asylum application data (see previous section). The asylum applications indicator is misleading for 2016 because a large share of those applications were filed by asylum seekers who already arrived in 2015 but were delayed in officially launching their claim due to administrative backlog.

2.4. Eurostat¹⁹

2.4.1. Data source

The European Statistical Office (Eurostat) compiles asylum statistics. Its data series on asylum applications contain statistical information based on Article 4 of the Council Regulation (EC) No 862/2007 with reference to asylum applications. These data are supplied to Eurostat by the national Ministries of Interior and related official agencies. Every effort is made to collect comparable data. Eurostat applies a set of standardized validation checks before publishing the data. The data collection is standardized according to EU regulations. However, in some cases, concepts and definitions may vary across countries, making comparisons between countries difficult and occasionally misleading.

¹⁸ BAMF - Bundesamt für Migration und Flüchtlinge (2018, 2021a); Bundesregierung (2021);

¹⁹ Note that variable definitions and descriptions of the data were partly taken verbatim from the Eurostat website at https://ec.europa.eu/eurostat/cache/metadata/en/migr_asyapp_esms.htm

2.4.2. Variables

- **Immigration:** Immigration is defined as the action by which a person establishes their usual residence in the territory of a Member State for a period that is, or is expected to be, of at least 12 months, having previously been usually resident in another Member State or a third country.²⁰ An immigrant is a person that holds different citizenship (i.e., the particular legal bond between an individual and their State, acquired by birth or naturalization, whether by declaration, choice, marriage, or other means according to national legislation) or was born in another country.

Generally, migration statistics include asylum seekers and refugees. However, the inclusion criteria may vary across Eurostat reporting countries. Germany includes asylum seekers and refugees in data on migration and population when they were usual residents for at least 12 months.

- **Asylum applications:** 'Asylum applicant' is a person who submitted an application for international protection or a person who has been included in such application as a family member during the reference period. 'Application for international protection' means an application for international protection as defined in Art.2(h) of Directive 2011/95/EU, i.e. a request made by a third-country national or a stateless person for protection from a Member State, who can be understood to seek refugee status or subsidiary protection status, and who does not explicitly request another kind of protection, outside the scope of this Directive, that can be applied for separately. This definition is intended to refer to all who apply for protection on an individual basis, irrespective of whether they lodge their application on arrival at the airport or land border, or from inside the country, and irrespective of whether they entered the territory legally (e.g., as a tourist) or illegally (see Art.4.1 (a) of the Regulation). In December 2013, the Technical Guidelines were reviewed by Eurostat jointly with DG HOME, EASO, and FRONTEX, to ensure the maximum harmonization of the asylum data collection methodology and to reflect the recent recast of the legislation in the area of asylum.

2.5. OECD

2.5.1. Data source

The migration statistics (OECD, 2008) of the Organisation for Economic Co-operation and Development (OECD) consist of stock and flow data on migration to 22 OECD countries from 2000 onward. It is composed of the census data of the individual countries or is a combination of

²⁰ https://ec.europa.eu/eurostat/cache/metadata/en/migr_imm_i_esms.htm

reporting and census data if no annual census takes place. Missing data were estimated or interpolated by the OECD if this was possible and justifiable. This enables researchers to work with a more complete list of origin countries, including smaller countries. The OECDM is used to provide flow data on migration and is presented descriptively in a cross-country comparison in this report. For Germany, it corresponds to the migration statistics data based on Destatis (see 2.1.). The OECDM only offers advantages if migration to Germany is to be compared with migration in other countries.

2.5.2. variable

Immigration to Germany based on OECD data is identical with immigration measurements in Destatis data (see 2.1). Destatis – the German Statistical Agency - reports immigrations statistics to the OECD and Eurostat using identical definitions. Thus, the immigration variable is defined as the number of foreigners establishing residence in Germany within a given year.

2.6. Gallup

2.6.1. Data source

The Gallup World Poll (GWP) is a global micro dataset that includes a range of individual characteristics, household characteristics, assessments of living situations, and future migration plans, desires, and preparations (Gallup, 2008). The dataset has been collected since 2006 and includes nationally representative surveys conducted regularly (usually annually) for most countries worldwide. It currently covers 160 countries and about 99 percent of the world's population. Typically, 1,000 people are surveyed per year in each country. In developing and emerging countries, the focus is on face-to-face interviews, while in industrialized countries, the survey is conducted by telephone. The group represented is the entire population aged 15 and older. In the context of this report, we use information on the number of individuals with a desire to migrate more generally and individuals who wish to migrate to Germany specifically. The data provides the opportunity to map migration potential using globally comparable microdata.

The data can be used as a repeated and weighted cross-section given that surveys occur every year, however, each time based on a new sample of individuals. The data does not allow to track who actually migrates and who does not.

2.6.2. Variable

The main variable used in the analysis is based on so-called ‘desire to emigrate’: “Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?”. If the respondents answered that they would like to emigrate, they are then asked where they would like to migrate to. This information is used to collect information on the desired destination and can be used as proxy for measuring the attractiveness of different destination countries, most importantly, Germany. The percentage of the adult population is multiplied with the adult population size and then aggregated globally to reflect the

number of people worldwide who reported any intention to migrate (see section 2.6) to the respective destination country. It is important to note that intentions do not reflect actual migration numbers given that many people with intentions eventually do not actually migrate (Tjaden et al., 2019).

2.7. Google Searches

2.7.1. Data source

Google Search is the world's most popular online search engine. Depending on the survey and source, Google's market share in the online search market varies between 80-95%.²¹ As internet penetration and usage expanded globally in the last decade, it is reasonable to expect that many potential migrants and actual migrants gather information about their intended destinations ahead of their move. Google searches have been used as a proxy to measure migration intentions (Böhme et al., 2020; Lin et al., 2019; Tjaden, 2020; Wanner, 2021). Google provides access to search data of users using their online search service through the 'Google Trends' API. Google provides data on the relative popularity of search terms across countries and time (since 2006).

2.7.2. Variables²²

Google Trends measures search intensity (i.e., popularity) of specific search terms using a normalized index on a scale from 0 to 100. 100 reflects the highest relative search interest in a specific term, and 0 reflects the lowest search interest. For a single keyword k , Google Trends provides the ratio of queries for k to the number of total queries in each region, normalized to 100 divided by the maximum of this ratio over all regions. This data allows comparing different regions' relative interest in the same keyword.²³

Data is normalized to make comparisons between terms easier. Search results are normalized to the time and location of a query by the following process:

- Each data point is divided by the total searches of the geography and time range it represents to compare relative popularity. Otherwise, places with the most search volume would always be ranked highest.
- The resulting numbers are then scaled on a range of 0 to 100 based on a topic's proportion to all searches on all topics.
- Different regions that show the same search interest for a term does not always have the same total search volumes.

Google Trends further offers "Topics" in which predefined thematic headings group all related words, alternative spellings, and names in other languages under a single label. Google's use of

²¹ <https://www.webfx.com/blog/seo/2019-search-market-share/>

²² Definitions were partially taken verbatim from the Google Trends website and support forums.

²³ Arslan et al. (2020)

predefined Topics to group together translations and alternative spellings and names for a theme is a powerful first step towards moving beyond linguistic boundaries when examining macro-scale search behavior. On the other hand, linguistic ambiguity can confound the findings of such groupings, both from the standpoint of ambiguous words that have different meanings in different languages, and questionable inclusions, like the terms leading to a high correlation with “2016” in the case of the presidential election.²⁴

The Google Trends Index has several limitations that exacerbate interpretation, especially regarding its meaning for potential migration: First, individuals searching migration terms online are not a random sample of the population. Results cannot be generalized to the population living in countries of origin. Second, results may vary considerably based on which terms are searched. It is not clear which terms are associated most closely with likely migration behavior. Nevertheless, several studies have confirmed an association between search intensity regarding migration and actual migration flows between countries (Böhme et al., 2020). Third, google use can vary considerably by country even when overall internet penetration is high since the platform is more popular in some countries than others. Fourth, it is unclear how google creates thematic categories, and their applicability may vary across different linguistic contexts. Five, more generally, it is not clear how language differences are considered given that results may vary depending on which language the user uses when entering search terms.

In the following, we will describe how we used the Google Search data as a proxy for potential migration intentions to Germany, comparable EU destination countries over time, and by origin country (see Figure 1-3):

Data restrictions:

- Search category: Visa & Immigration (555)
- Time: 1.1.2006–31.12.2020 → output is a monthly value per location and keyword
- Channel: "web" searches
- search term: "Germany"

Data retrieval and manipulation:

- Using a custom function created for the Google Trends API via the "gtrendsR" package
- Geo locations: all non-EU countries present in one of the other data sources, i.e. Eurostat, Destatis or Gallup (197 out of 225 countries or territories)²⁵
- Monthly data is aggregated by year
- The google trends index is normalized for the search volume in every country to improve comparability across country. When aggregating results based on pooling various origin countries, small countries have similar weight than large countries in terms of the interest

²⁴ Leetaru (2015)

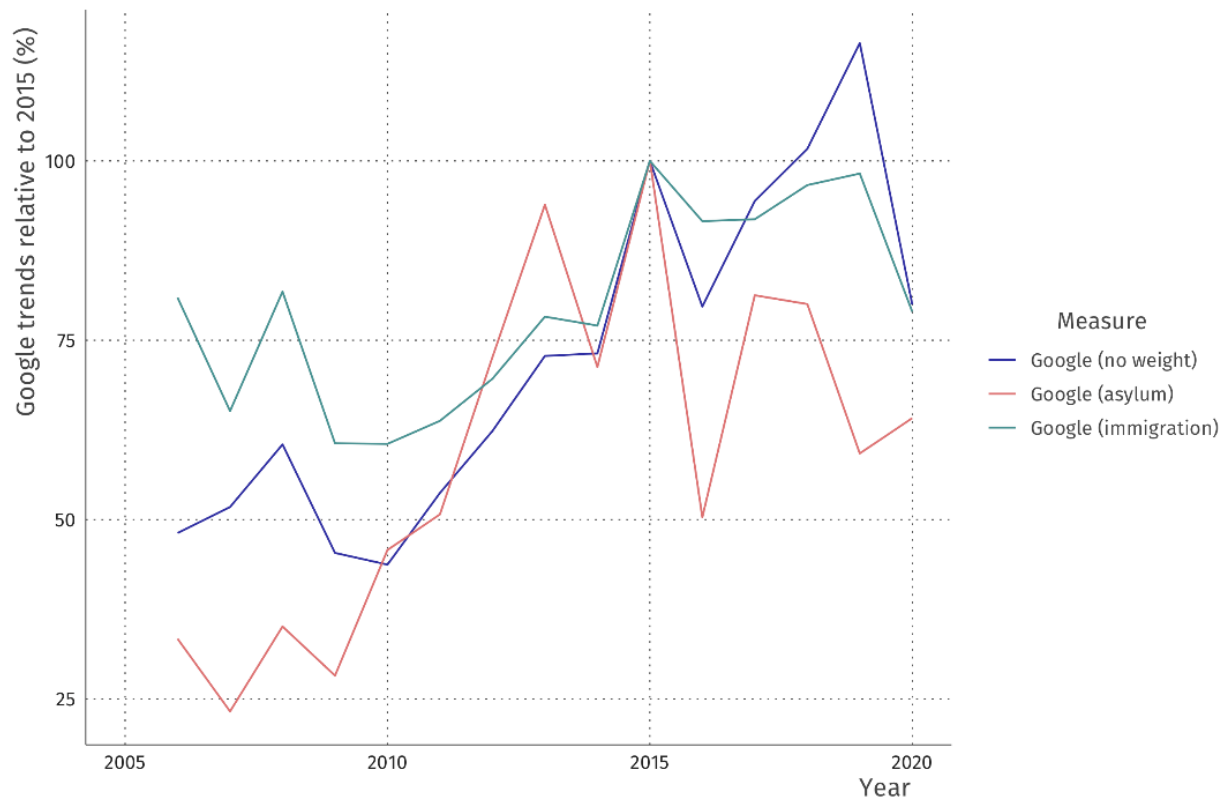
²⁵ Kosovo is not included due to it not having a clearly identifiable google country code (MK-KOS is supposedly coding Kosovo as a sub-region of Northern Macedonia but an error occurs while pulling and it is also questionable whether this subregion would actually represent all of Kosovo). As a result, Kosovo is unfortunately not included in any of the gtrends variables.

in migration to Germany. However, the implications of varying interest in Germany for potential migration flows to Germany depend on the size of the country. For example, a value of 100 in the Vatican has a very different meaning for the report's topic than a 100 in Syria, or a very populous country such as China (where not many people use google) or a country with overall very high google search volume such as the USA. As a result, we create a weighting factor. Two weights are introduced: by immigration to Germany and by number of asylum applications to Germany. Each weight is the result of dividing the sum of all immigrants or asylum applicants from one origin country in the same time window when the gtrends are recorded (i.e. 2006-2020) by the total number of immigrants or asylum applications respectively across all available origin countries in 2006-2020. In Figure 2, where we plot different destination countries, this is of course done relative to the total volume of immigrants/asylum applicants to the respective destination country.

- Weights introduce a limit on data availability. For the destination country Germany, this results in 83 non-EU country weights based on immigration and 171 non-EU country weights based on asylum applications. The reason for that is that the immigration data by Destatis only specifies some (usually the major) origin countries individually and aggregates the rest per continent ("Übriges Asien", "Übriges Afrika" etc.). The asylum applications data by Eurostat does not aggregate but displays a value for all individual origin countries.

Figure S1 below shows differences between weighted versions of gtrends. Each line shows the sum across origin countries' annual gtrends values.

Figure S1: Comparing different operationalizations of internet searches by various weighting factors (% relative to 2015)



Note: All indicators based on Google search data retrieved from Google Gtrends API in 2021. Indicators standardized as percent relative to 2015 levels. Google Trends when unweighted, i.e. all countries weighted the same, by asylum application volume (171 countries) or immigration volume (83 countries). Author's calculations.

3. Methods

3.1. Descriptive analysis

Figures 1-3 in the manuscript display the average level of actual and potential migration using a large range of data sources. The descriptive analysis is based on various steps which are outlined below for each Figure.

3.1.1. Plots in the manuscript

Figure 1: Migration Flows and Intention to Germany

Figure 1 consists of two panels: A) actual migration flows to Germany B) potential migration to Germany. All panels exclude EU countries because migration from EU countries are unaffected by Merkel's decision to keep the border open in 2015 due to free movement within the EU.

Panel A includes data from Eurostat (asylum applications) and Destatis (immigration). Panel B includes data from the Gallup World Poll (see previous section) and Google Trends.

Data on potential migration based on intentions to migrate to Germany is based on repeated cross-sectional surveys conducted worldwide. The number of countries where the survey was conducted varies over the years. As a result, data are available each year between 2010 and 2018 for only 77 out of the 132 non-EU countries. Since the values for each indicator are later aggregated by summing across origin countries per year, including a varying number of countries per year would lead to misleading variation of the total number. Unfortunately, the survey was only conducted in 9 (3 non-EU) countries in 2020, and the 2019 survey rounds were not evenly distributed across continents. For example, there are no survey results for African countries in 2019 (see section 4 for a full list of data availability by country, year, and indicator). In order to maximize the number of countries included while maintaining consistency across years, the intention variable is restricted to countries with available observations between 2010 and 2018, where gaps of one missing observation between available observations is filled using linear interpolation. Applying linear interpolation increases the number of eligible countries from 77 to 89.

The aggregated indicator values across all panels are then divided by the respective indicator value in 2015. As a result, all displayed values are in % relative to 2015. This enables comparing trends across indicators and focuses on the timing of Merkel's 2015 decision.

Finally, the values for each indicator are converted using the spline function in R in order to smooth out the lines in the plot. This step is purely for aesthetic reasons and does not change the trends shown.

Figure 2: Migration to various European destination countries

Figure 2 compares actual and potential migration Germany with other major EU destination countries, including France, Spain, Italy, and the United Kingdom. The same data processing steps are outlined under 2.1.1. are applied and adjusted for various destination country levels. Few exceptions apply:

- The immigration indicator is based on Destatis data for migration to Germany. Migration to Spain, Italy, and the UK is based on Eurostat data. France, unfortunately, is missing for this indicator.
- The indicator of asylum applications is capped at 600%. The number of asylum applications in Spain in 2019 relative to 2015 was at 798.9% and was the only value affected by the cap.

In order to provide some context to the relative trends across destination countries, see the table below displaying the 2015 reference values and minima and maxima.

Table S1: 2015 base values across indicators

	Migration Indicators across EU Destination Countries, 2010-2019				
Characteristic	DEU	ESP	FRA	GBR	ITA
Immigration					
2015 Ref. Value	1,125,347	165,955	NA	190,397	186,522
Minimum	305,411	143,675	NA	127,649	180,271
Maximum	1,125,347	477,649	NA	260,357	305,137
Asylum Applications					
2015 Ref. Value	456,555	14,740	75,875	39,325	82,100
Minimum	47,200	2,550	52,530	24,035	9,850
Maximum	720,925	117,755	150,455	44,695	128,780
Google Trends*					
2015 Ref. Value	5.90	2.27	3.45	1.08	2.34
Minimum	2.70	0.58	2.52	0.43	2.06
Maximum	5.90	5.86	4.08	3.29	4.27
Intention**					
2015 Ref. Value	182,135,753	56,336,566	152,698,937	185,521,471	62,252,143
Minimum	54,790,227	53,390,267	21,985,337	13,861,145	23,360,948
Maximum	196,566,009	92,904,332	196,658,214	263,758,096	82,981,968

Note: * Google Trends indicator has been pre-processed according to steps described in section 2.7. As a result, absolute values presented in this Table are not meaningfully interpretable. ** Intentions indicator reflects the number of people worldwide who reported any intention to migrate (see section 2.6) to the respective destination country (columns). This does not reflect actual migration numbers given that many people with intentions eventually do not actually migrate (Tjaden & Auer 2019).

Figure 3: Migration to Germany by key origin region and indicators

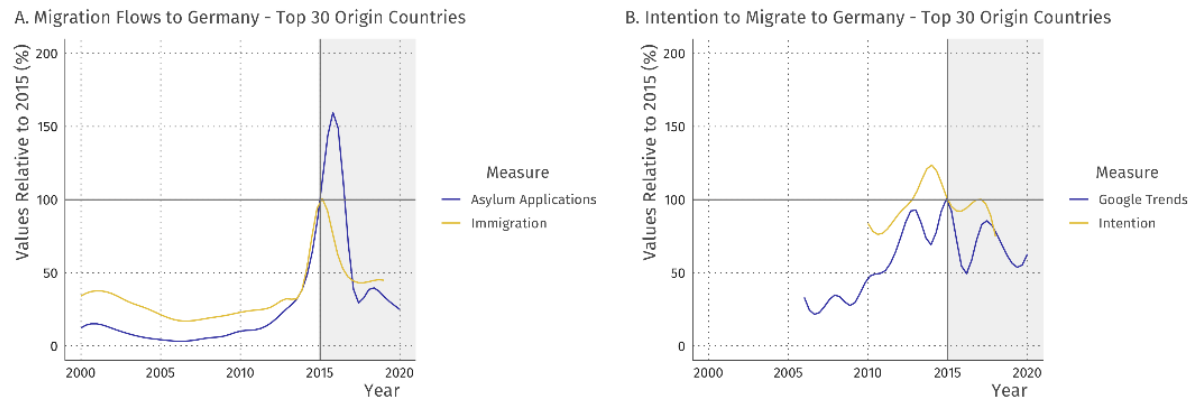
Figure 3 shows actual and potential migration to Germany by key origin regions including Africa (excluding Middle and Southern Africa), Eastern Europe/Balkans, Middle East, and Southern Asia. The groupings are loosely based on the Worldbank world regions. Each sub-region includes the following list of countries:

- 1) Eastern Africa: BDI, COM, DJI, ERI, ETH, KEN, MDG, MOZ, MUS, MWI, MYT, RWA, SOM, SYC, TZA, UGA, ZMB, ZWE
- 2) Western Africa: BEN, BFA, CIV, CPV, GHA, GIN, GMB, GNB, LBR, MLI, MRT, NER, NGA, SEN, SHN, SLE, TGO
- 3) Northern Africa: DZA, EGY, ESH, LBY, MAR, SDN, SSD, TUN
- 4) Eastern Europe/Balkans: ALB, BIH, MKD, MNE, SRB, XKX, BLR, MDA, RUS, UKR

- 5) Middle East: ARE, ARM, AZE, BHR, GEO, IRQ, ISR, JOR, KWT, LBN, OMN, PSE, QAT, SAU, SYR, TUR, YEM
- 6) Southern Asia: AFG, IRN, PAK

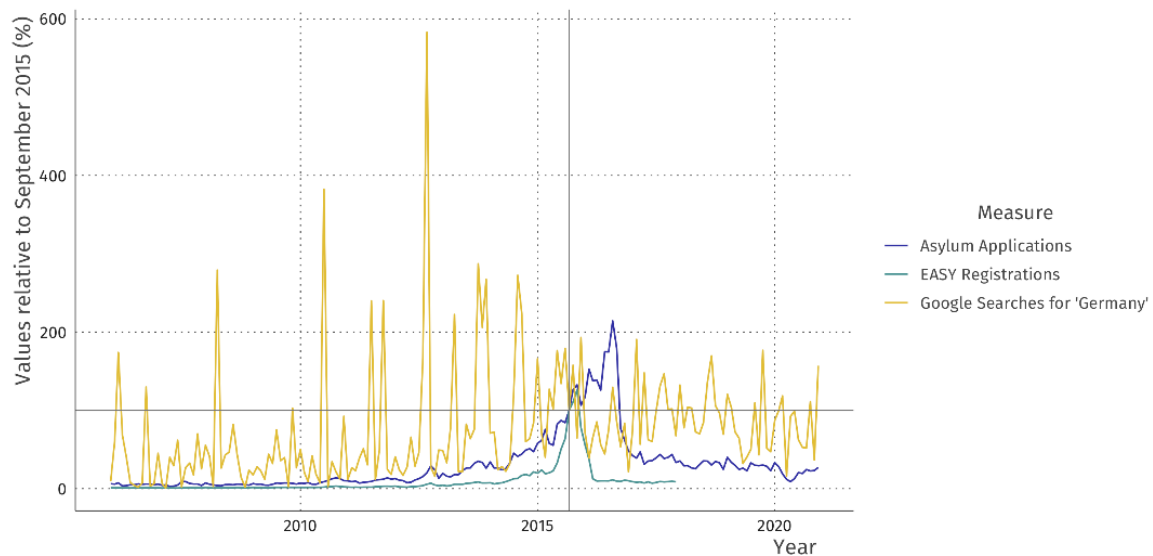
The same data processing steps outlined under 3.1.1. are applied and adjusted for various origin regions country levels.

2.2.2. Supplementary figures

Figure S2: Actual and potential to migration from top countries of origin (% relative to 2015)

Note: Asylum applications and immigration based on Destatis data, Google Trends based on Gtrends API data, intentions based on Gallup World Poll. See Annex, Section 3, on details on data sources and variable specifications. The sample is restricted to the top 30 origin countries with existing migration channels with Germany. Top 30 selection is done by ranking across indicators, in total 45 non-EEA countries. Intention to migrate data is restricted to countries with consistent available observations between 2010 and 2018 where gaps of one missing observation between available observations has been filled using linear interpolation. Unlike Figure 1 in the main manuscript, the Figure above does not incorporate EASY data to correct bias in asylum applications for 2016. The spike in asylum applications for 2016 is misleading because most applications were launched by asylum seekers who entered Germany already in 2015. Formal applications were delayed due to administrative backlogs (see section 2.2 and 2.3 for details). All EEA countries excluded. All indicators are standardized as percentages relative to 2015 levels. Author's calculations.

Figure S3: Monthly asylum applications, EASY registrations, and Internet searches for Germany



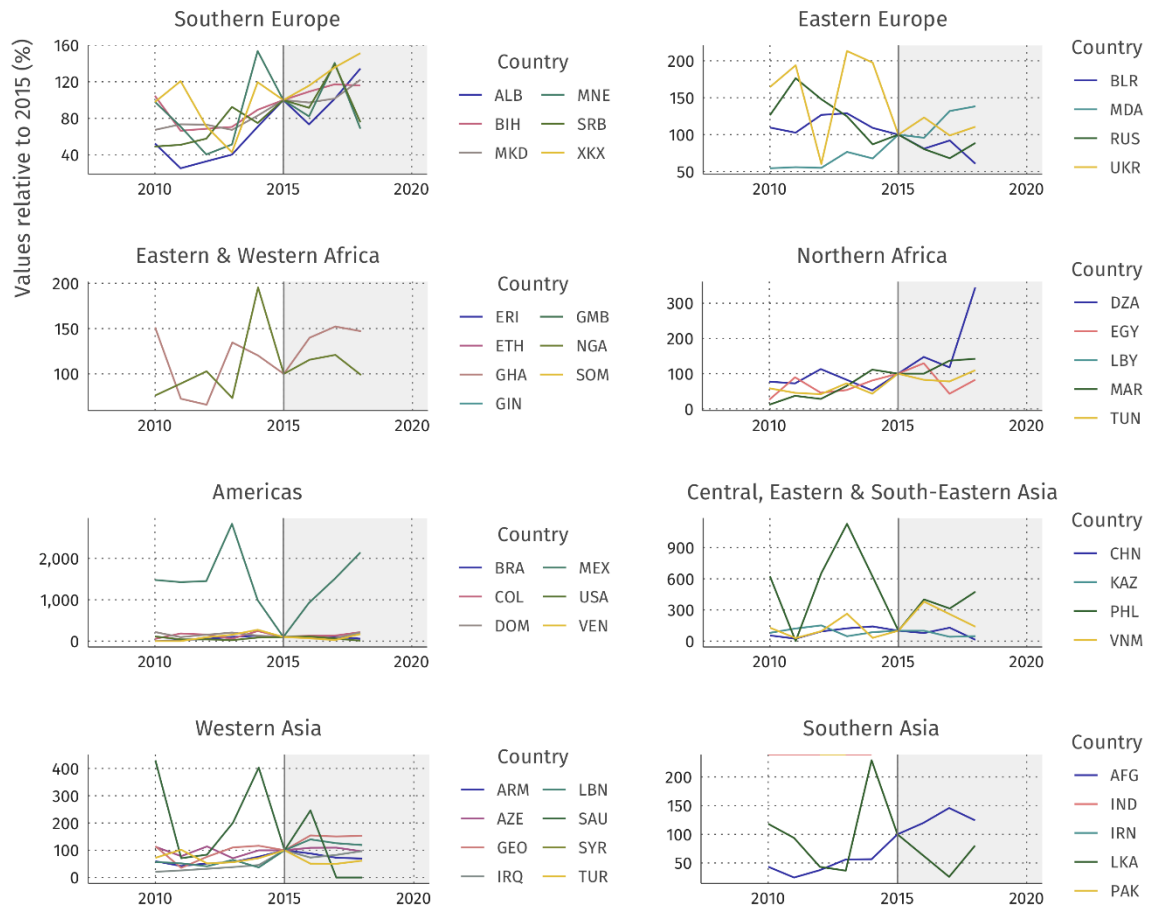
Note: Asylum applications and EASY registrations are based on BAMF data, Google Searches based on Gtrends API data. See Annex, Section 2, on details on data sources and variable specifications. The sample of origin countries of actual and potential migrants includes all countries with available data for each indicator except for EEA countries. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph highlights discrepancy between EASY registrations of asylum seekers immediately after entering Germany and asylum applications launched by asylum seekers after they have been assigned to a county.

Figure S4: Comparing various operationalizations of migration intention measures (% relative to 2015)



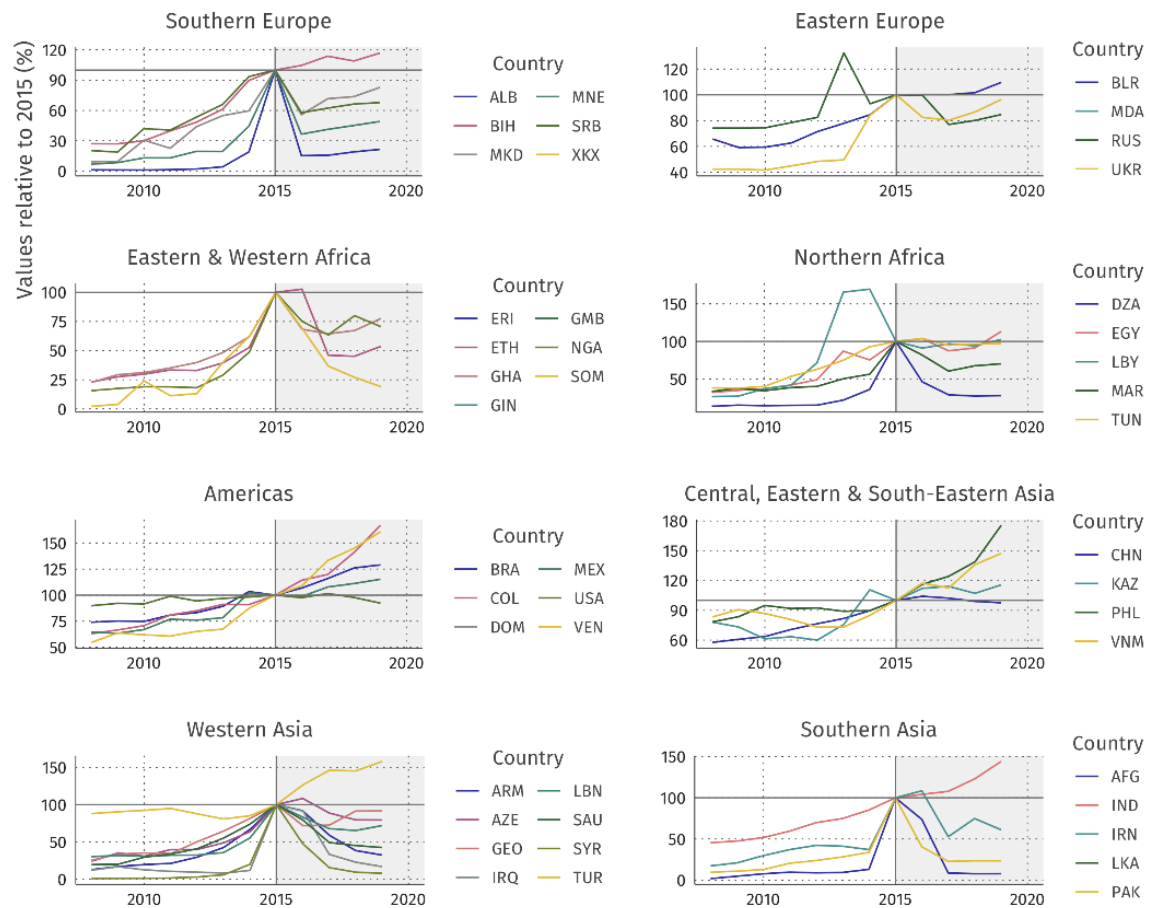
Note: : All indicators based on Gallup World Poll. See Annex, Section 2, on details on data sources and variable specifications. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph highlights differences in results based on various specifications of migration intentions. Availability of survey data varies by year and country. No restrictions: 132 countries. Restrictions: Consistent observations between 2010 and 2019 - 37 countries; consistent observations between 2010 and 2018 - 77 countries. If indicated, linear Interpolation was used to fill gaps of one or two missing observations in 'intention' variable to fulfil restriction: Consistent observations between 2010 and 2019, Lin. Int. - 41 countries (gaps of 1 or 2 NA), Consistent observations between 2010 and 2018, Lin. Int. - 89 (gaps of 1 NA) or 94 (gaps of 1-2 NA) countries.

Figure S5: Share of Adult Population with Intention to Migrate to Germany in major origin countries (% relative to 2015)



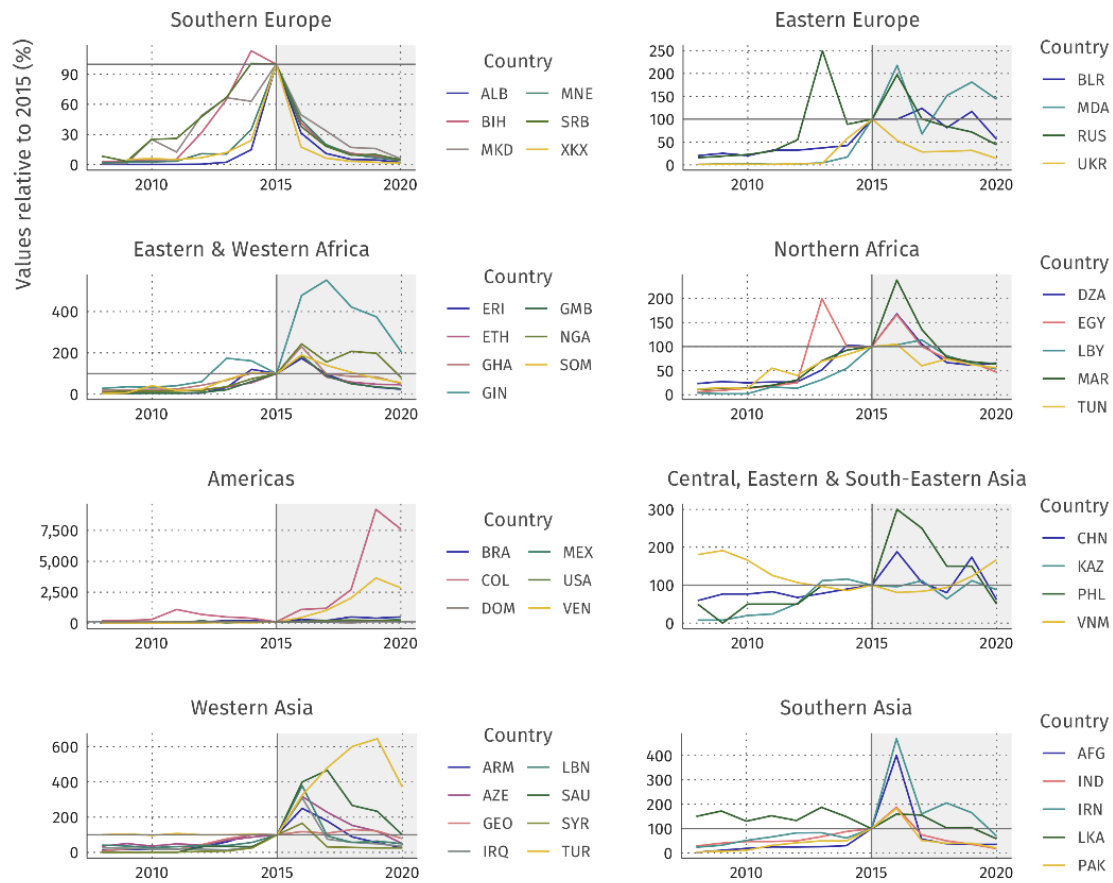
Note: All indicators based on Gallup World Poll. See Annex, Section 2, on details on data sources and variable specifications. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph shows migration intentions from the top countries of origin for Germany by sub-region. Top 30 country sample based on ranking across top 30 origin countries across indicators resulting in 45 non-EEA countries.

Figure S6: Migration to Germany by major Origin Countries (% relative to 2015)



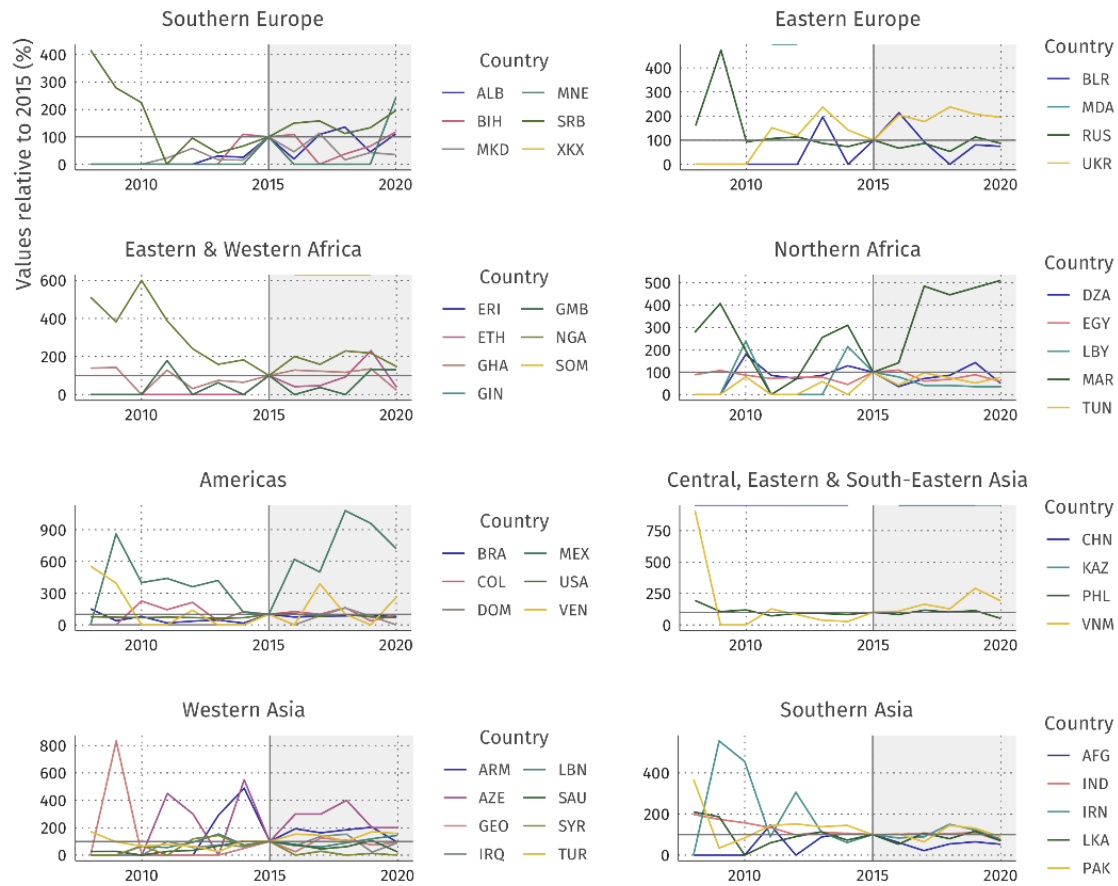
Note: : All indicators based on Destatis. See Annex, Section 2, on details on data sources and variable specifications. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph shows migration from the top countries of origin for Germany by sub-region. EEA countries are excluded. Top 30 country sample based on ranking across top 30 origin countries across indicators resulting in 45 non-EEA countries.

Figure S7: Asylum Applications in Germany by Major Origin Countries (percent relative to 2015)



Note: All indicators based on Eurostat. See Annex, Section 2, on details on data sources and variable specifications. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph shows asylum applications from the top countries of origin for Germany by sub-region. Top 30 country sample based on ranking across top 30 origin countries across indicators resulting in 45 non-EEA countries.

Figure S8: Google Searches for “Germany” in Visa & Immigration Context by Major Origin Countries (percent relative to 2015)



Note: All indicators based on Gtrends API. See Annex, Section 2, on details on data sources and variable specifications. All indicators are standardized as percentage relative to 2015 levels. Author's calculations. The graph shows migration-related google searches from the top countries of origin for Germany by sub-region. Top 30 country sample based on ranking across top 30 origin countries across indicators resulting in 45 non-EEA countries.

3.2. Econometric analysis: Design choices, specification & results

To assess the robustness of the trends that we observe descriptively (see manuscript), we explore econometric, quasi-experimental approaches. Specifically, we use difference-in-difference estimates, panel data analysis, and event study designs.

3.2.1. A difference-in-difference estimates of the effect on asylum flows

Difference-in-difference (DiD) approaches are widely used in impact evaluation (Gertler et al., 2011). They assume that a treatment and control group would have seen a similar development over time had it not been for the treatment (i.e., Merkel's decision in 2015). By differencing out time-invariant differences between treated and control groups, difference-in-difference approaches can be used to analyze indicators with statistical differences in levels, e.g., asylum flows from countries with very different sizes.

Empirically, in a DiD approach, the effect of interest can be captured by

$$Y_{ct} = \beta_0 D_c + \beta_1 T_t + \beta_2 D_c T_t + \gamma X_{ct} + \phi_c + \epsilon_{it} \quad (1)$$

where outcome Y_{ct} are asylum applications from country c in Germany at time t . Vector D_c takes the values 1 and 0 to indicate which countries are part of the treatment and comparison group, respectively. The timing of the treatment is indicated by dummy T_t , which is 0 before the treatment and takes the value 1 from the time of the treatment. Country-specific time-invariant differences are captured by ϕ_c . If this term is included, $\beta_0 D_c$ will be subsumed in ϕ_c . We include it in the equation nonetheless to make the mechanics of the procedure more transparent. Time-varying confounders can be included in X_{ct} . ϵ_{it} is the error term.

The vector β_2 captures the parameters of interest. For each post-treatment point in time, it provides the difference between treatment and control group. If the identifying assumptions hold, these coefficients can be interpreted as the causal effect of the treatment. The vectors β_0 and β_1 provide estimates of the time-invariant country differences and the variation over time. Since Y_{ct} refers to relationships between origin country and Germany, β_1 captures Germany-specific as well as global variation over time that affects all origin countries proportionally.

In our first implementation of this approach, we study monthly first-time²⁶ asylum claims by origin country. This is the best available, country-level estimate of the number of new asylum seekers in Germany. However, the series has a major drawback: Due to asylum authorities in Germany being overwhelmed with the number of applications, there were waiting times until asylum seekers could formally apply for asylum and thus enter the statistic (see details regarding the EASY data in

²⁶ i.e. not renewals or other reasons to apply a second time for asylum.

Section 2). That means asylum claims are an imperfect proxy for asylum inflows, with the lag being particularly prominent in winter 2016. Still, we can rule out that asylum seekers had filed a claim before entering Germany and thus use claims as a proxy of increases after the event (see Figure S3). A short-term effect of the policy change in September 2015 might be therefore underestimated, but the overall post-treatment average of asylum claims, which is the most important number for the difference-in-difference approach, remains unaffected.²⁷

A crucial decision is the choice of treatment and control group. The decision not to adhere to the Dublin regulation referred to all asylum seekers in principle. In practice, it was primarily aimed at Syrian refugees and others, especially from the Middle East and Africa, who had good reasons to believe they would be allowed to stay in Germany. However, for potential asylum seekers from so-called “safe origin countries”²⁸ there was no policy change. For these, the assumption is that there is no persecution and, therefore, no valid reason for asylum. However, asylum seekers have the right for an individual hearing where they can provide proof of persecution and then obtain protection.

We thus estimate whether the policy change in September 2015 made a difference for the number of asylum applications from the non-EU countries that are not safe countries of origin. We define Y_{ct} as $\log(\text{asylum seekers} + 1)$, where adding 1 ensures that the sample remains balanced and countries do not drop out from the estimation due to months with exactly 0 (i.e., the undefined $\log(0)$) asylum applications.

The results in Table A2 show that throughout the different specifications, there has been no persistent and significant increase in the number of asylum seekers relative to the control group from September 2015. The relevant interaction effect (β_2) is close to zero and insignificant in columns 1 to 3, where we estimate the model without trend, with a general linear one, and with a 3rd order polynomial trend. These trends pick up the overall rise in numbers of asylum seekers over time that was already visible in Figure 1 in the main manuscript. The third-order polynomial trend and the insignificant coefficients for β_1 and β_2 indicate that both treatment and control undergo a global trend that sees a sharp increase starting in the late 2000s already. In column 4, we add conflict fatalities in origin countries to control for different time-varying conflict intensities in countries of origin. Violent conflict is, of course, only one reason for seeking asylum abroad. While comparable persecution data only exists in the form of relatively imperfect indicators at the yearly level, conflict fatalities are available monthly. Adding them shows a clear link between the numbers of asylum seekers in a country of origin and monthly asylum claims in Germany from the respective country. A one percent increase in conflict fatalities is associated with about 0.15 percent more asylum claims. Adding this variable with lags to account for asylum seekers needing several months to get to Germany and formally claim asylum does not affect the basic pattern.

When adding log conflict fatalities in column 4 β_2 coefficient turn negative and weakly significant. It remains very similar when adding the third-order polynomial that accounts for the global trend

²⁷ This aspect thus merely affects the variance of the outcome variable and hence the standard errors as well as a global trend, if included.

²⁸ Senegal, Ghana, the non-EU Balkan countries and all EU countries. We exclude EU origin countries for our analysis because there are no documented asylum flows to Germany and the potential asylum seekers would already have been in the EU and thus not subject to the Dublin regulation.

in asylum numbers. The estimates indicate that, if anything, asylum claims were lower from September 2015 than would have been expected based on conflict fatalities and the trend across all countries.

Our difference-in-difference results thus indicate that there has not been any persistent causal increase in the number of asylum seekers to Germany that can be associated with the September 2015 decision.

Difference-in-difference estimates can be interpreted as causal if the common trend assumption holds, i.e., if the treatment and control group would have developed along a parallel path in the absence of treatment. Deviations from this parallel path could then serve as the estimate of the causal effect. When introducing polynomial trends as in columns 2 through 5 of Table A2, the identifying assumption becomes that deviations from the respective polynomial trend would have developed in parallel in the absence of the treatment. In either case, it is important that the treatment and control group would have developed similarly over time. An indication for this assumption is often the analysis of the pre-treatment trends of both groups. We study these in the following subsection.

Table A1: Difference-in-difference estimate of effect of September 2015 on monthly asylum claims in Germany

Outcome	(1) First claims	(2) First claims	(3) First claims 3rd order polynomial trend	(4) First claims	(5) First claims 3rd order polynomial and fatalities
Controls (X)	no controls	linear trend		Fatalities	
post-treatment (0/1)	0.968*** (0.123)	0.0134 (0.167)	0.0516 (0.124)	1.181*** (0.122)	0.168 (0.137)
post-treatment X treated	-0.0139 (0.0629)	-0.0139 (0.0629)	-0.0139 (0.0629)	-0.135** (0.0676)	-0.122* (0.0682)
trend		0.0106*** (0.00108)	-0.0282*** (0.00210)		-0.0272*** (0.00225)
trend squared			0.000665*** (2.85e-05)		0.000651*** (3.34e-05)
trend cubic			-2.79e-06*** (1.11e-07)		-2.75e-06*** (1.51e-07)
log (fatalities)				0.171*** (0.00940)	0.147*** (0.00719)
Country specific time-invariant fixed effect	yes	yes	yes	yes	yes
Observations	15,144	15,144	15,144	14,136	14,136
R-squared	0.914	0.923	0.936	0.919	0.938

Notes: Estimate from OLS model with fixed effects. Heteroskedasticity-robust standard errors clustered at the monthly level in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The outcome variable is set as the log of monthly asylum claims from a given country plus 1 application. This transformation is done to avoid an unbalanced panel where countries of origin drop out whenever they have a month with 0 applications (NB: $\log(0)$ is undefined). The same transformation is used for $\log(\text{fatalities})$. Post-treatment is an indicator which takes the value 0 before September 2015 and 1 from that date. Treated is an indicator for the treatment group. Post-treatmentXtreated is the interaction of both variables. The trend is defined linearly as the number of months since the start of the panel, which begins in January 2006.

3.2.2. Event study based on asylum application in Germany

Event studies are widely used in empirical finance, among other fields, where news about specific firms can induce changes in valuations relative to a comparison group. The approach can also be considered a difference-in-difference design but differs from the typical DiD applications by having access to more points in time and fewer time-varying explanatory variables. Compared to a state-of-the-art DiD design, event study implementations have a stronger focus on whether there were developments before the treatment. These would indicate that the treatment had been anticipated (highly unlikely in our setting) or that other developments have been the driving forces of divergences in the time series of interest.

Two assumptions are essential to estimate the causal effect of an event. First, in the absence of the event of interest, outcomes of the treated and control groups would not have diverged systematically. Second, the treatment of interest must not have been anticipated. That means the causal effect can only set in once the treatment has taken place.

Adapting this empirical approach to our setting, the time series of interest is the migration flow from each origin country to Germany. The treatment of interest has taken place in the first week of September 2015. Depending on the time dimension of the respective outcome variable, this is captured by week, month, or year variables.

Despite the similarity to DiD, the equation for the event study framework is written slightly differently. Here, the focus will be on lags before and after the treatment, thus putting the focus on pre- and post-treatment behavior and hence the persistence of the effect.

Then,

$$Y_{ct} = \beta_3 D_c \sum_{\tau=-36}^{\tau=24} T_{t_0-\tau} + \gamma X_{ct} + \phi_c + \epsilon_{it} \quad (2)$$

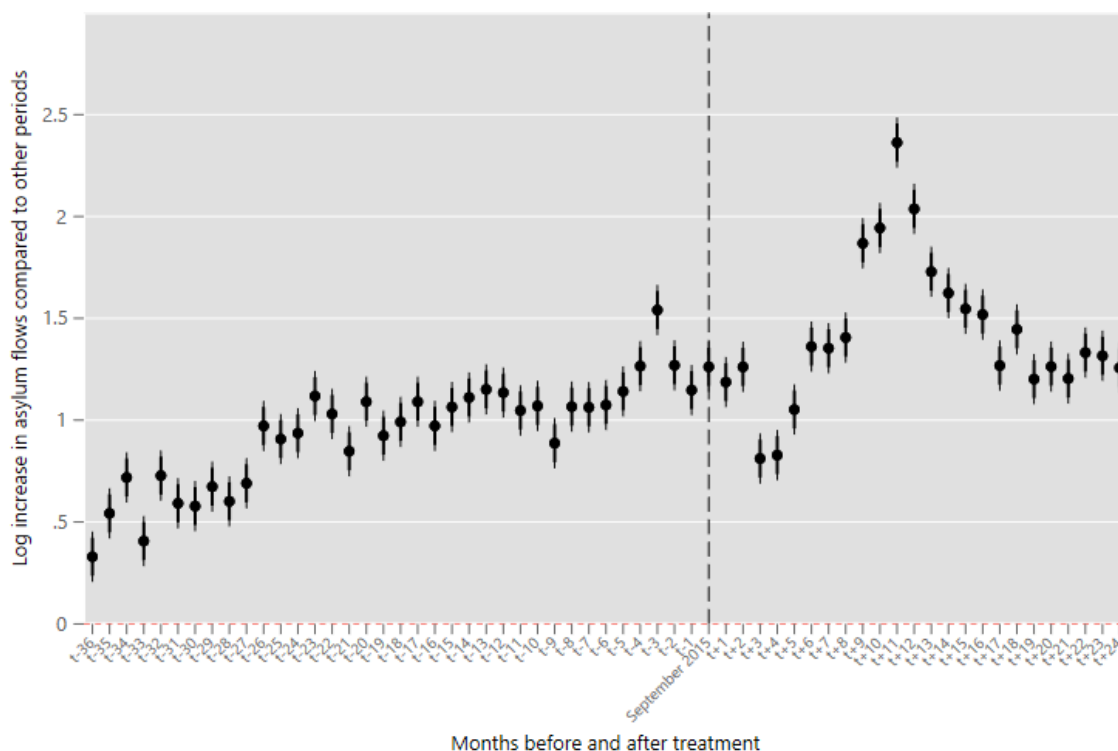
Here β_3 captures time-specific pre-treatment and post-treatment differences around the date of the policy change t_0 . The monthly nature of our outcome variable and data availability led us to choose pre-treatment window of 36 months and post-treatment windows of 24 months. This exact choice does not drive the results and matters for the visualization of the results only. The remainder of the equation is identical to that of the difference-in-difference approach.

Figure S9 provides estimates of the monthly difference between treated and controls groups in a 36 months window before and after September 2015. The dashed vertical line marks the event of interest. The vertical axis plots, for every point in the time window of interest, β_3 , i.e. the log difference in first asylum claims between treated and control groups conditional on the country

fixed effect. These estimates are calculated without any control variables (X_{ct}), so they only account for the time-invariant heterogeneity by country captured by ϕ_c .

In an ordinary event study, we would expect to see a significant difference between treatment and control groups only emerging at the time of the treatment of interest. In Figure 1 (main manuscript) and in line with the descriptive evidence shown in Figure S9, we see that the numbers of asylum seekers in the treated group already started rising significantly three years before September 2015. Already in March 2013 (26 months before the treatment of interest), first asylum claims were about 0.7 log points higher in the treatment group than in the control group. The estimated difference was relatively stable at around 1.0 log points difference from 2013 until 2017, only under- and then overshooting it in late 2015 to 2016 as part of the lag in asylum processing. This clearly shows that the large increase in asylum numbers occurred already long before Merkel's policy shift in 2015.

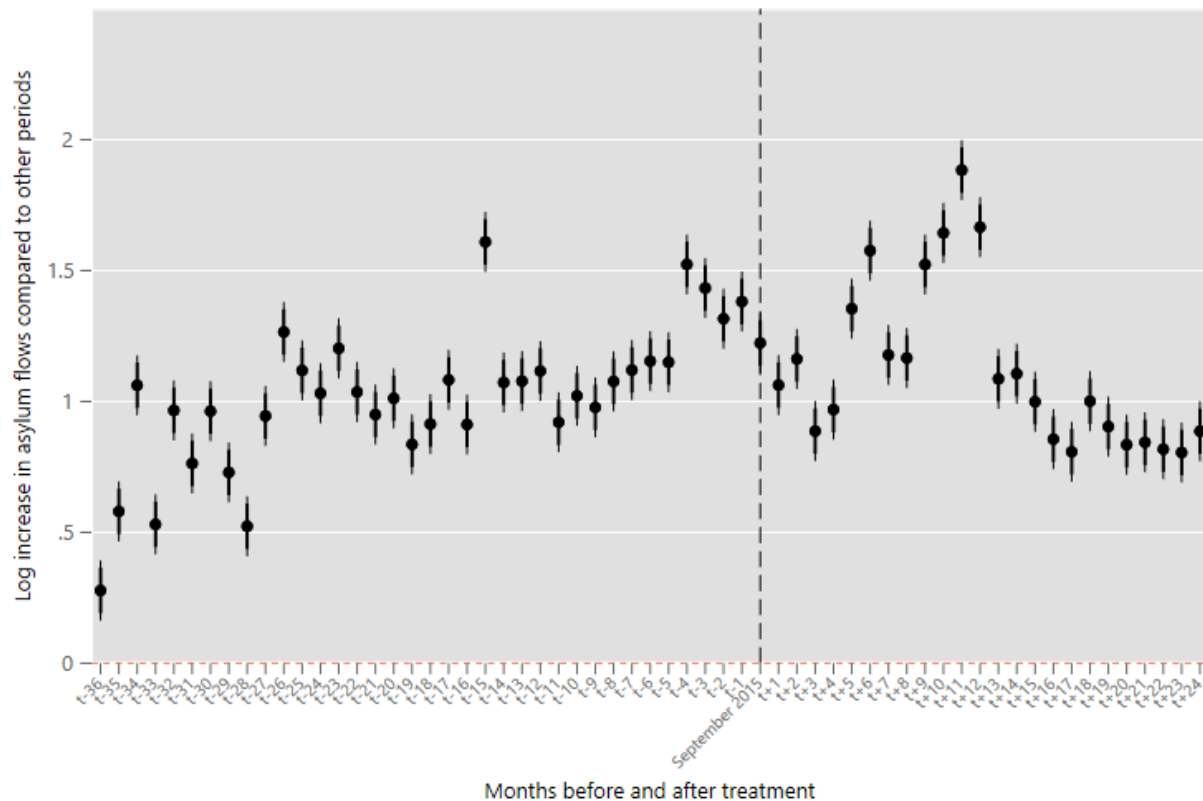
Figure S9: Event study estimate of September 2015 effect on first asylum claims



Note: BAMF data, authors' calculations. Model as specified in formula (2(2) above. The control group are all "safe countries of origin." The estimates in this graph are without any control variable X_{ct} .

In Figure S10, we assume that only Syrians were treated by the policy change. This makes the standard errors larger but the data show a very similar divergence of treatment and control group that already started more than 2 years before the assumed treatment. This should be interpreted as suggesting that a simple difference-in-difference model that assumes the relevant treatment that led to a divergence between groups is mis-specified. It was other factors that led the effect that was later attributed to Angela Merkel's decision.

Figure S10: Event study estimate of September 2015 effect on first asylum claims with only Syrians in treatment group

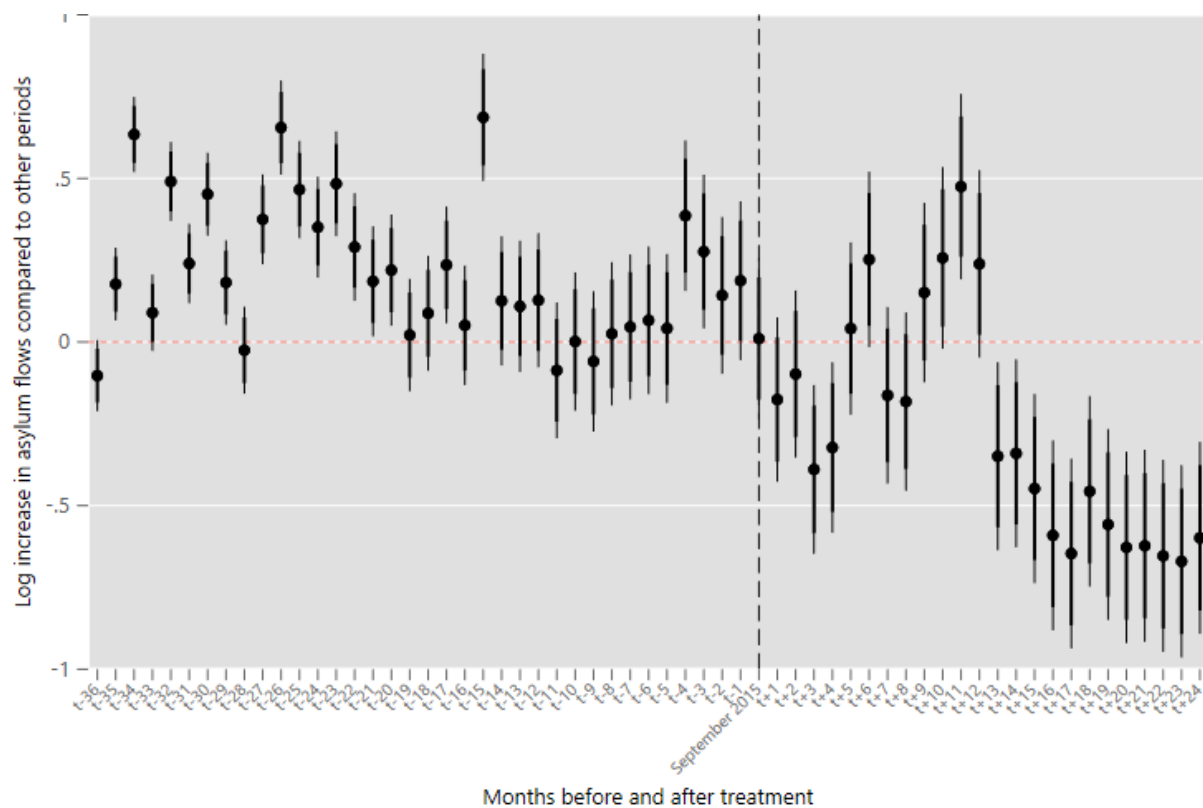


Note: BAMF data, authors' calculations. Model as specified in formula (2(2)) above. The control group are all "safe countries of origin." In contrast to Figure S9 above, the treatment group is restricted to Syrians. Non-Syrians who are not part of the control group are excluded from the estimation. The estimates in this graph are without any control variable X_{ct} .

In S11, we add two crucial control variables. The first one is, again, log conflict fatalities in each country. This is meant to be an essential push factor. The second variable we include is the log cumulative number of asylum seekers from the respective country who have already filed claims in Germany since the start of the time series in 2006. We include this variable as a proxy for network effects such as arrivals in Germany reducing monetary and psychological costs and uncertainty for later arrivals from the same country as they could provide information and contacts. That is sometimes viewed as a pull factor, although a better characterization is that it can increase flows by reducing frictions and thus making the journey to Germany more attractive. The estimates indicate that 35 to 20 months before Merkel's policy change, more Syrians claimed asylum in Germany than the model would predict. As the conflict worsened in Syria, the number of Syrians claiming asylum in Germany did not significantly overshoot the model prediction anymore. From September 2015, there was no significant increase in claims. Notably, from October 2016 onwards, the estimates are significantly below zero, indicating over 50 percent fewer first asylum claims from Syria than the model would have predicted.

When accounting for the severity of the violent conflict in Syria and the potential network effects created by those already in Germany, our estimation thus shows that even for Syrians, there was no increase in asylum claims after September 2015 compared to other groups. That is remarkable because Syrians should be expected to be the nationality that received the clearest signal that Germany had adjusted its policy.

Figure S11: Event study estimate of September 2015 effect on first asylum claims with only Syrians in treatment group (controlling for network effects and intensity of violent conflict)



Note: BAMF data, authors' calculations. Model as specified in formula (2) above. The control group are all "safe countries of origin." The treatment group is restricted to Syrians. Non-Syrians who are not part of the control group are excluded from the estimation. Control variable X_{ct} are the log cumulative number of asylum seekers who have arrived from the respective country of origin since 2006 and log conflict fatalities in the same country of origin.

3.2.3. Annual inflows of foreign population – Panel analysis

In addition to the previous analyses which focus on asylum seekers, we next analyze all migration inflows. This way, we can assess whether there was any systematic increase in migration numbers that could be due to the welcoming picture Germany presented to the outside world. To this end, we use bilateral inflows of migrants from all countries for which the German statistical

office provides such data.²⁹ Bilateral immigration data is only publicly available for Germany at an annual frequency. Therefore, we must use yearly data, which means the 2015 numbers are a mix of what occurred before and after the September 2015 treatment.

We estimate a linear panel regression with origin-country and year fixed effects as well as additional explanatory variables. The outcome variable is the bilateral log inflows of the foreign population from an origin country to Germany in a given year.³⁰ The outcome of interest is the year fixed effects in the model that capture all unexplained variation in average migration flows to Germany from different countries that are not explained by other variables. If there was a lasting Merkel effect, this should show a positive shift of year fixed effects following 2015. Our panel starts in 2007 to ensure that we can use a balanced panel where the number of countries remains fixed and the selective inclusion of certain countries does not drive year-on-year differences.

We control for the log population at origin since fast-growing countries tend to have increasing emigration numbers over time while shrinking, rapidly aging economies will have falling annual migration. Furthermore, we add the log migrant stock from the respective country in Germany. This variable accounts for network effects. In addition, we account for the unemployment rate in the origin country, which may pick up the effect of economic crises that increase emigration. The model is completed by origin-country fixed effects that eliminate all time-invariant origin-specific characteristics. Since the only destination country in the model is Germany, these fixed effects also absorb the effect of all bilateral factors that do not change over time, such as the average differences in the level of income during the sample, geographic distance, languages, or migration policies that remain unchanged.

We estimate the model separately for all origin countries and then again only for non-European origin countries because some of the dynamics might differ for them. The results in Table A3 and the plots of the year fixed effects in Figures S13 indicate that there was no increase in migration inflows after 2015. By contrast, 2015 marked the high water mark of the unexplained, time-varying components of the immigration inflows that are captured by the year fixed effects. There is thus no indication of a Merkel effect in yearly immigrant inflows to Germany. The increase in immigration to Germany started already much earlier as the panel data show.

²⁹ Some countries that have very few immigrants per year are censored for data protection reasons in the most recent years. Typically, this happens if there are fewer than four immigrants from a given country in a given year. These are then added to an aggregate such as “other Africa”, which means the observation cannot be used in this section as we require bilateral yearly data. See section 2 for details on the data source and variables used.

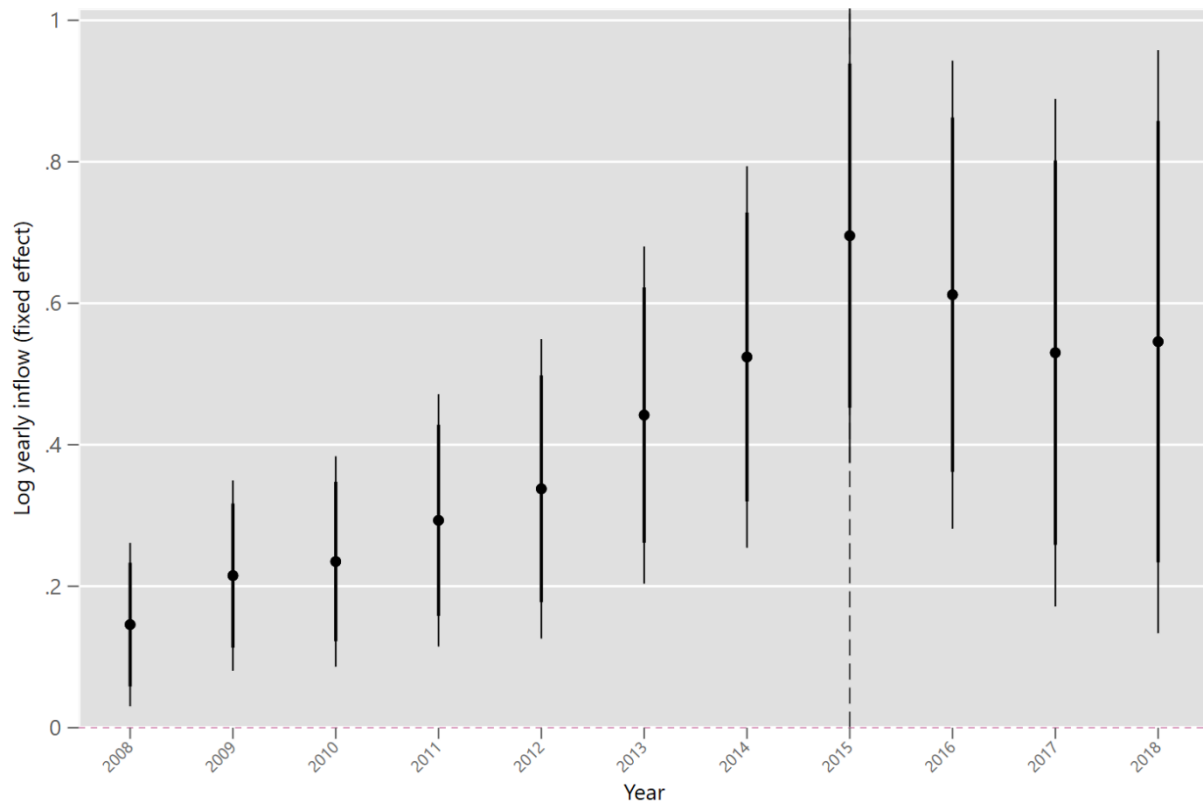
³⁰ Before taking logs, we add one immigrant to avoid losing zero observations. This does not drive the results. Alternatively using a poisson fixed effects estimator which accounts for the zeros more convincingly (see Silva and Tenreyro (2006) yields qualitatively identical results. Given the censoring in some years, which leaves zeros unreported, which would bias the poisson estimator as well, we stick to the panel model in logs.

Table A3: Fixed-effects estimation of immigrant inflows to Germany

Outcome	Log immigrant inflow	
	(1)	(2)
Origins	All origin countries	Only non-Euro-origins
Log population in origin	1.589*** (0.415)	2.153*** (0.459)
Log migrant stock in DEU	0.105 (0.151)	0.526*** (0.127)
Unemployment rate in origin	0.0171 (0.0142)	0.0303 (0.0206)
Fixed effects: Year 2008	0.146*** (0.0442)	0.156*** (0.0517)
Fixed effects: Year 2009	0.215*** (0.0515)	0.206*** (0.0594)
Fixed effects: Year 2010	0.235*** (0.0570)	0.180*** (0.0664)
Fixed effects: Year 2011	0.293*** (0.0683)	0.186** (0.0759)
Fixed effects: Year 2012	0.338*** (0.0810)	0.151* (0.0892)
Fixed effects: Year 2013	0.442*** (0.0913)	0.258** (0.105)
Fixed effects: Year 2014	0.524*** (0.103)	0.310*** (0.105)
Fixed effects: Year 2015	0.696*** (0.123)	0.478*** (0.121)
Fixed effects: Year 2016	0.612*** (0.127)	0.366*** (0.125)
Fixed effects: Year 2017	0.530*** (0.137)	0.222* (0.129)
Fixed effects: Year 2018	0.546*** (0.158)	0.151 (0.141)
Origin country fixed effects	yes	yes
Observations	2,454	1,753
R-squared	0.176	0.220
Number of origin countries	141	102

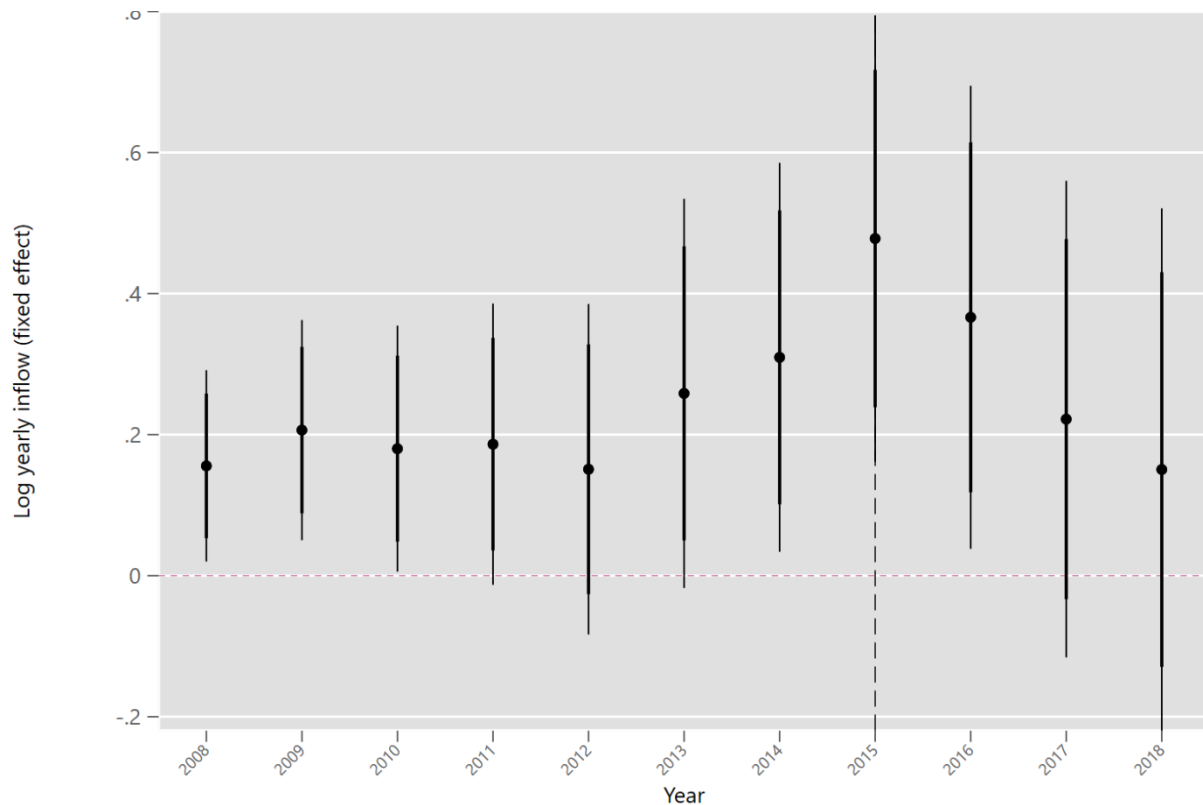
Note: Authors' calculations based on OECD data. Robust standard errors in parentheses

Figure S12: Predicted average yearly differences in log migration inflows of foreign population to Germany (year fixed effects) after controlling for unemployment, diaspora, political variables, and time-invariant country characteristics – estimated for all origin countries except major asylum seeker origins



Note: Migration data from OECD and Destatis, population and unemployment data from World Development Indicators. Authors' calculations. Panel model with country and year fixed effects as well as controls for the size of the immigrant stock, population at origin, and unemployment at both origin and in Germany. Estimates for all available origin countries except main origin countries of asylum seekers (see text).

Figure S 13: Predicted average yearly differences in log migration inflows of foreign population to Germany (year fixed effects) after controlling for unemployment, diaspora, political variables, and time-invariant country characteristics – Only estimated for non-European origin countries



Note: Migration data from OECD and Destatis, population and unemployment data from World Development Indicators. Authors' calculations. Panel model with country and year fixed effects as well as controls for the size of the immigrant stock, population at origin, and unemployment at both origin and in Germany. Estimates for non-European origin countries only. Main origin countries of asylum seekers (see text) excluded.

3.2.4. Event study of migration intentions and plans of coming to Germany

Asylum claim numbers are an excellent data source for the analysis because they are reliable and available monthly. However, they refer to people who have reached Germany and decided to claim asylum. In theory, the “pull effect” hypotheses assumes that policy change signals reach potential migrants in origin countries who have not yet migrated or attempted to migrate unsuccessfully. As a result, we apply the Event Study Design (see section 3.2.3) to data on potential migration based on the Gallup World Poll (see section 2).

We exploit information on the exact interview date to estimate any policy effect on intentions. It should be noted that data collection in a given country does not occur throughout the year. Instead, interviews are usually finished in a given country within about a month.

We use two outcome variables: Migration intentions and migration plans. First, we analyze whether there is evidence of a Merkel effect on the whole population, i.e., whether more people wanted to migrate to Germany post-treatment. Second, we examine whether, among those who intend to migrate or make concrete plans, there is evidence of an effect.

We restrict the sample to those individuals who intend/plan to migrate. Both are introduced into the model as a dummy variable that only codes individuals as 1 who intend or plan to migrate to Germany and 0 for those intending or planning to migrate to another country.

Furthermore, the model controls for origin-year fixed effects, which account for any differences at the yearly level within a given country. This setup allows focusing on the time around the shock. To achieve this, we restrict the sample to 30 days before and after September 2015. Hence, we are comparing whether aspirations changed around the highly publicized events in early September. We control for country-year fixed effects in the different specifications, which takes out any time-invariant country differences. We then estimate the model with only a post-treatment dummy and then again with several individual-level covariates that are included to increase the precision of the estimation. These covariates account for differences in the probability of migration that are well-documented in the literature. We add dummies for male and married respondents, age and age squared, log per capita household income, education levels (low/middle/high), the number of children and its squared value, and urban versus rural location and two indicators accounting for individuals with a positive/negative outlook regarding the local economic situation at their current place of residence (baseline category: neutral)

In Table S2, columns 1 and 2, we define the outcome variable as 1 for anyone who had indicated intentions to migrate to Germany at the time of the interview and 0 otherwise. Zeros thus comprise those without migration intentions as well as individuals who intended to migrate to other destinations. The second indicator used in columns 3 and 4 focuses only on those individuals who indicate any migration intentions. Among these, persons planning to migrate to Germany in the coming 12 months are coded as 1, whereas those planning to migrate to other countries are coded as zero.

We estimate the linear probability model using OLS. Standard errors are clustered at the origin country level. The results in columns 1 through 4 indicate that there has been no “Merkel effect.” Neither do we find an increase in longer-term overall intentions to migrate to Germany or shorter-run effects on migration plans during the next 12 months. Adding individual level controls in columns 2 and 4 does not lead to substantial changes. The coefficient for the post-treatment period is negative and significant at the 10 percent level in column 2, so if anything, we find that migration intentions to Germany fell slightly at the time of the alleged “Merkel effect.” These results do not change qualitatively when whether using sampling weights or not.

Table S2: Change in migration intentions and migration plans to Germany in +/-30 day window around treatment (broad definition of outcome)

Outcome variable	(1)	(2)	(3)	(4)
Subset	All observations	Migration intentions to Germany	Only those with any migration intentions	
Post treatment dummy	-0.00778 (0.00494)	-0.0151* (0.00856)	-0.0193 (0.0184)	-0.0300 (0.0263)
male		0.00690 (0.00418)		0.00795 (0.00530)
married		-0.00134 (0.00240)		-0.00385 (0.00364)
age		-0.000745 (0.000471)		0.000270 (0.000357)
agesq		4.75e-06 (4.65e-06)		-5.37e-06 (5.09e-06)
log_pc_hh_inc		0.00113*** (0.000356)		-0.000541 (0.000769)
2.education		0.000222 (0.00176)		0.00244 (0.00244)
3.education		0.0100 (0.00814)		0.0203** (0.00909)
number_children		0.000143 (0.00110)		-0.000919 (0.00157)
number_children_sq		3.25e-05 (0.000119)		0.000126 (0.000154)
urban		-0.00427 (0.00301)		0.00126 (0.00242)
loc_better		-0.000798 (0.00302)		0.00440* (0.00256)
loc_worse		0.00837* (0.00439)		-0.00265 (0.00541)
Country year fixed effect	yes	yes	yes	yes
Observations	26,513	23,232	4,933	4,617
R-squared	0.029	0.035	0.017	0.028

Notes: Authors' calculation based on Gallup World Poll. Heteroskedasticity-robust standard errors that cluster at the origin country level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Outcome variable in columns 1 and 2 counts all individuals as zero who replied to intention question and do not want to migrate to Germany. Individuals who intend to migrate to Germany are coded as 1. Outcome variable in columns 3 and 4 assesses all individuals with any intentions and excludes those without any migration intentions.

Next, we broaden the time window studied. We include all available points in time and thus move the analysis from a narrow time window to an analysis focused on differences over several years. The treatment dummy remains the same as before, with 0 indicating all dates before early September 2015 and 1 after that.

The “plans to migrate in the next 12 months” was only covered in the 2010 to 2015 survey rounds of the Gallup World Poll. Hence the last observations are from early January 2016. The plans variable can thus only be used to analyze shorter-run effects until the end of 2015 while the intentions question can also be used for longer-run estimates. Nonetheless, we include it in the following analysis to get beyond the 30-day window analyzed above.

Since we are now not working at a daily frequency but compare data from different years, we cannot use country-year fixed effects anymore since these would absorb the within-country difference that we want to measure. We, therefore, include country fixed effects and year fixed effects separately. The former account for between-country differences that remain fixed over time, i.e., factors such as greater distance to Germany. The latter control for global changes in the outcome variable over the years, which means they should be checked for evidence of a “Merkel effect” that is not static after treatment but varies over the years. In an unbalanced panel such as the Gallup World Poll, country fixed effects are essential to consider because changes over time are not driven by individual countries with higher or lower (static) migration intentions enter or drop out from the sample. The year fixed effects account for trends that are common to all countries over time.

Table S3: Individual level analysis of intentions and plans to migrate to Germany before and after Fall 2015 in most important origins of asylum seekers

Outcome variable	(1) Migration intention to Germany	(2) Migration intention to Germany	(3) Migration plan to Germany	(4) Migration plan to Germany
Post treatment dummy	0.00179 (0.00215)	0.000368 (0.00228)	0.00279 (0.00358)	0.00234 (0.00337)
male		0.00329*** (0.000904)		0.00305*** (0.000788)
married		-0.00172*** (0.000488)		-0.000675 (0.00116)
age		-0.000116 (8.03e-05)		0.000102 (0.000130)
agesq		-7.04e-07 (5.94e-07)		-1.27e-06 (1.58e-06)
log_pc_hh_inc		8.50e-05 (0.000115)		-0.000341 (0.000268)
2.education		0.00199** (0.000834)		0.00168** (0.000757)
3.education		0.00369*** (0.00106)		0.00286*** (0.00100)
number_children		-0.000258 (0.000194)		3.04e-05 (0.000352)
number_children_sq		3.80e-06 (1.00e-05)		2.22e-05 (4.72e-05)
urban		-0.00200*** (0.000377)		-0.00131 (0.00100)
loc_better		-1.02e-05 (0.000357)		0.000873 (0.000673)
loc_worse		0.00424*** (0.00105)		0.00185 (0.00119)
2009.year	-0.00111 (0.000720)			
2010.year	0.000360	0.00131**		

	(0.000612)	(0.000617)		
2011.year	7.62e-05	0.000590	0.00134	0.00121
	(0.000983)	(0.000621)	(0.000845)	(0.000869)
2012.year	-0.000218	0.00123*	0.000338	0.00115
	(0.000918)	(0.000719)	(0.00102)	(0.000930)
2013.year	0.00160	0.00222**	0.00305**	0.00241
	(0.00101)	(0.000877)	(0.00130)	(0.00149)
2014.year	0.00220**	0.00217**	0.00138	0.000885
	(0.00108)	(0.00104)	(0.000893)	(0.000978)
2015.year	0.00171	0.00217*	0.00146	0.000492
	(0.00107)	(0.00111)	(0.00125)	(0.00126)
2016.year	0.000661	0.00226	0.000915	-0.000206
	(0.00228)	(0.00245)	(0.00203)	(0.00209)
2017.year	0.000704	0.00224		
	(0.00220)	(0.00229)		
2018.year	0.00139	0.00311		
	(0.00255)	(0.00268)		
Country fixed effects	yes	yes	yes	yes
Observations	1,498,255	1,223,849	161,883	139,020
R-squared	0.017	0.021	0.014	0.017

Notes: Heteroskedasticity-robust standard errors that cluster at the origin country level in parentheses. *** $p < 0.01$,

** $p < 0.05$, * $p < 0.1$. Outcome variable in columns 1 and 2 counts all individuals as zero who replied to intention question and do not want to migrate to Germany. Individuals who intend to migrate to Germany are coded as 1.

Outcome variable in columns 3 and 4 are plans to migrate to Germany. Individuals without any migration intentions are coded as not having plans.

Next, we estimate the same model in a more focused subsample to see whether there had been reactions in the most likely countries. We restrict the overall sample to the most important non-European origin countries of refugees: Afghanistan, Iran, Iraq, Nigeria, Pakistan, Somalia, and Turkey.³¹ We have no post-treatment data in the Gallup World Poll for Syria because the last interviews to date took place in January 2015. Furthermore, Eritrea is among the most important origin countries for asylum seekers to Germany. With North Korea, it is among the very few countries that the Gallup World Poll has never covered. For completeness, Table S5 below provides the numbers of respondents over time for the most important non-European origin countries of asylum seekers to make the country composition transparent.

The results in Table S4 show that there has, if anything, been a decrease in the number of people who intend to migrate from Afghanistan, Iran, Iraq, Nigeria, Pakistan, Somalia, and Turkey to Germany. The point estimate of the post-treatment dummy is very close to zero and statistically insignificant in all columns.³² That means there has not been a measurable increase in migration

³¹ Russia as well as the non-EU Balkan countries have been important origin countries of asylum seekers over the last 15 years. Chances for recognition are however very low. In a separate analysis, we find no effects on these countries either.

³² None of the year fixed effects indicates any increase or decrease in intentions to migrate to Germany since all are statistically insignificant. Also, the plans variables do not indicate any changes in 2015.

intentions or plans to Germany in the post-treatment period in these important origin countries of asylum seekers to Germany.

Table S4: Individual-level analysis of intentions and plans to migrate to Germany before and after Fall 2015 in most important origins of asylum seekers

Outcome variable	(1) Migration intention to Germany	(2) Migration intention to Germany	(3) Migration plan to Germany	(4) Migration plan to Germany
Post treatment dummy	-0.00163 (0.0131)	-0.00779 (0.0122)	0.0177 (0.0267)	0.0146 (0.0269)
male		0.00986* (0.00481)		0.0103** (0.00367)
married		-0.00528* (0.00222)		-0.00641 (0.00476)
age		-0.000273 (0.000296)		0.000489 (0.000434)
agesq		-2.10e-07 (2.24e-06)		-5.00e-06 (3.80e-06)
log_pc_hh_inc		-7.89e-05 (0.000385)		-0.000569 (0.000942)
2.education		0.00726** (0.00250)		0.00493** (0.00151)
3.education		0.00627 (0.00787)		0.00717 (0.00696)
number_children		-0.000688 (0.000806)		0.00115* (0.000503)
number_children_sq		1.89e-05 (3.34e-05)		-6.68e-05* (3.29e-05)
urban		-0.00572 (0.00299)		-0.00249 (0.00386)
loc_better		-0.000903 (0.00322)		0.00153 (0.00234)
loc_worse		0.00896 (0.00465)		0.00627 (0.00408)
Observations	76,247	53,403	8,476	6,745
R-squared	0.013	0.022	0.019	0.031

Notes: Gallup World Poll, authors calculations. Heteroskedasticity-robust standard errors that cluster at the origin country level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Outcome variable in columns 1 and 2 counts all individuals as zero who replied to intention question and do not want to migrate to Germany. Individuals who intend to migrate to Germany are coded as 1. Outcome variable in columns 3 and 4 are plans to migrate to Germany. Individuals without any migration intentions are coded as not having plans. Sample consists of Afghanistan, Iran, Iraq, Nigeria, Pakistan, Somalia, and Turkey. Syria is not included because the last Gallup interviews took place in the winter of 2015, so there is no post-treatment variation. Eritrea as the remaining country among the most important origin countries of asylum seekers was never covered by the Gallup World Poll.

Table S5: Respondent numbers and coverage over time in most important origin countries of asylum seekers

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Afghanistan	1,000	1,939	993	996	1,996	997	965	937	961	987	986	12,757
Iran	1,037	0	0	1,680	279	965	986	973	970	983	982	8,855
Iraq	803	967	1,944	1,906	1,441	970	935	924	954	973	891	12,708
Nigeria	0	958	989	997	1,956	928	987	970	927	957	912	10,581
Pakistan	2,464	2,772	985	991	2,780	997	996	1,000	1,000	1,581	954	16,520
Somalia	0	0	0	0	0	0	956	980	1,152	0	0	3,088
Turkey	976	969	973	992	1,965	971	966	982	973	987	984	11,738
Total	6,28	7,605	5,884	7,562	10,417	5,828	6,791	6,766	6,937	6,468	5,709	76,247

3.2.5. Event study using Google searches

Complimentary to the analysis on migration intentions in section 3.2.4, we now analyze Google searches for “Germany” in different origin countries to understand whether interest in Germany increased around the time of the treatment. In Figure S14, we report an analysis identical in spirit to the above. We estimate the change in the search volume for a given country 24 months before and 36 months after September 2015. We restrict the sample to the years 2013³³ to 2020. The baseline period is the rest of the sample, which covers January 2006 to December 2020. As the control group, we once again use safe countries of origin.

The results in Figure S14 show that searches spiked in September 2015 and then decreased quickly. The size of the estimated effect (9.36) indicates that as a percentage of the month with the highest search volume for “Germany” in a given country, searches were about 9 percent higher in September 2015 than otherwise. The estimates remain consistently above 0 for the next six months, i.e., until March 2016, when additional discouraging policies such as the EU-Turkey statement came into effect. Any estimates may be biased upward because people may have searched for news from Germany during the time of the so-called “migration crisis.” That should make it more likely to find a significant increase in search interest. The zero effect we find is thus particularly conservative.

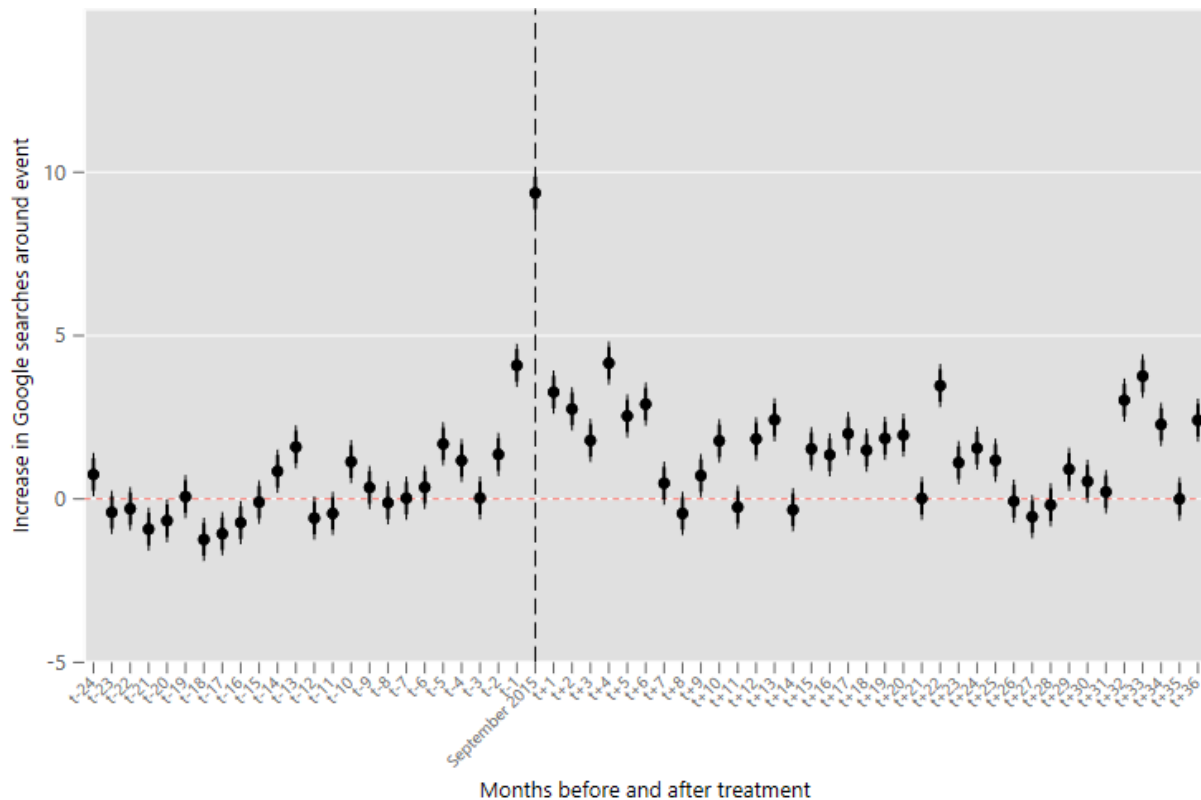
Still, the overall effect is relatively small. The outcome variable is scaled between 0 and 100 for each country. The maximum of 100 marks the month with the highest number of searches for “Germany” in that country.

In the post-treatment period, searches for Germany were at most about 4 percent higher on average. Overall, there is no large, persistent increase in searches across countries, although coefficients often remain positive and significantly different from zero. Analogous analyses with a Poisson fixed effects model, better suited to the large share of zeros in the outcome variable, show

³³ In many countries in the sample, internet use and Google searches in particular, were not that widespread before the advent of smartphones and hence counted as zero.

similar estimates with any consistent effects dissipating after March 2016. The spike in searches to Germany in t+19 (December 2016) across Africa that is visible in Figure S15 below is likely to be related to the Islamic State related terrorist attack in Berlin in that month.³⁴

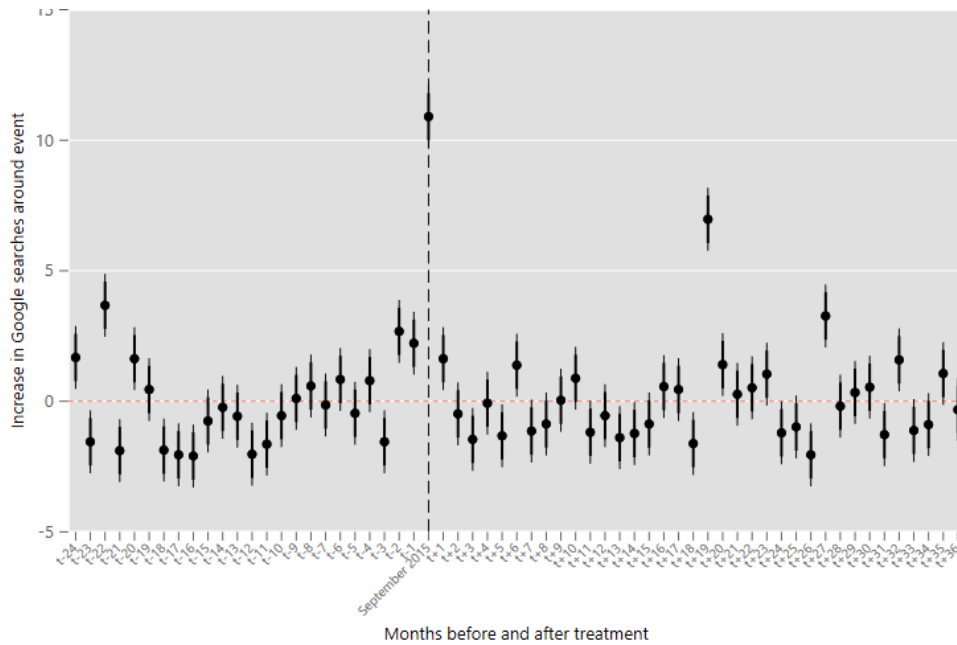
Figure S14: Average changes in Google searches for „Germany“ across all available origin countries around September 2015



Note: GTrends data, authors' calculations. Event study estimates predicting the monthly search volumes for "Germany" across all available origin countries. See section 2.7 for details on data and variables.

³⁴ Related searches such as „Germany truck“ (a truck was used to crash into the Christmas market) show the same spike. The perpetrator was a known criminal from Tunisia, which seems to have sparked particular interest in the news across Africa.

Figure S15: Average changes in Google searches for „Germany“ in African origin countries around September 2015



Note: GTrends data, authors' calculations. Event study estimates predicting the monthly search volumes for "Germany" across all available origin countries.

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