

RESEARCH REPORT

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CESifo FORUM

Increasing immigration numbers in many parts of the world make it crucial for policy makers to think about effective integration policies. In this volume of the CESifo Forum we shed light on important mechanisms of immigrant integration: Access to citizenship and legal status in the destination country. Today's citizenship laws are historically shaped by the legal traditions of each country. Birthright citizenship, as one of those traditions, early access to citizenship and legal status in a country play a major role in the context of successful integration strategies. Our contributors show that liberalizing citizenship laws and easing legalization foster the educational, economic and social integration of immigrants. Gender-specific effects can be observed and should be considered in policy measures.



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Integration Policy: Determinants and Consequences of Citizenship and Legalization

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Graziella Bertocchi and Chiara Strozzi

Citizenship at Birth in the World

The mounting pressure of international migration has placed citizenship policy center stage on the policy agenda. Each country in the world has developed an independent and often complex system of rules that govern the attribution of citizenship and interferes not only with immigration policy at large but also with labor regulation, welfare programs and demographic dynamics.

Citizenship is the legal institution that designates full membership in a state along with the associated rights (such as the voting franchise, favorable employment opportunities, and forms of legal protection and duties that may include mandatory voting, the military draft, and renunciation of one's original citizenship). There are three main modes for acquiring citizenship: at birth, by naturalization, and by marriage. This article focuses on the attribution of citizenship at birth, assesses its origins and diffusion, and suggests which factors may be behind its evolution.

Regulating citizenship at birth—which is particularly relevant for immigration countries and ends up affecting second-generation immigrants—is rooted in a country's legal origin. Common law is associated with the *jus soli* principle, according to which citizenship is attributed by birthplace: this implies that the child of an immigrant is a citizen of the destination country as long as she is born in that country. Civil law is instead associated with the *jus sanguinis* prin-

ciple, that is, citizenship by blood: accordingly, a child inherits citizenship from her parents, independent of her birthplace, so that the child of an immigrant is not going to be a citizen herself (unless the parent is naturalized). This key distinction is that *jus soli* implies an inclusive attitude with respect to immigrants' children, whereas *jus sanguinis* implies an exclusive one.

ORIGINS

In eighteenth-century Europe, *jus soli* was the predominant criterion, following the feudal tradition of serfdom that assigned the human beings born on the lord's land to that lord. The French Revolution broke with this heritage and, with the Napoleonic Civic Code of 1804, reintroduced the ancient Roman custom of *jus sanguinis*. During the nineteenth century, *jus sanguinis* spread to the rest of continental Europe and was eventually transplanted to its colonies. Britain instead preserved the *jus soli*



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tradition and transmitted it to the Empire, including the North American colonies that later formed the United States. By the end of the nineteenth century, most countries throughout the world had established provisions regarding citizenship acquisition, with *jus soli* being the norm in common-law countries and *jus sanguinis* regulating citizenship law in most civil-law countries.

Despite being rooted in these legal traditions, the attribution of citizenship at birth has gone through a process of continuous adaptation that accelerated after World War II, in conjunction with key events such as the decolonization process, the collapse of the socialist system, and the intensification of international migration flows. In several countries, adaptation implied convergence to mixed regimes that involved elements of both *jus soli* and *jus sanguinis*.

The analysis of the experience of individual countries and regions—drawing from Joppke (1998), Aleinikoff and Klusmeyer (2000, 2001), Brubaker (1992) and Bertocchi and Strozzi (2010)—is instructive. Within Europe, we observe a variety of trends. Britain, that up to World War II had adhered to a particularly inclusive attitude toward all subjects of the Empire, progressively restricted its legislation as a reaction to intense post-war migration flows from former colonies. The British Nationality Act of 1984 heavily delimited *jus soli* by stipulating that a child born in the United Kingdom was a citizen only if a parent was a resident of the United Kingdom. France, after the aforementioned adoption of *jus sanguinis* in 1804, reintroduced elements of *jus soli* for military purposes. In 1889, it recognized the principle of double *jus soli*, by granting citizenship to children born in France of foreign parents who were in turn born in France. The case of Germany was deeply affected by the fall of the Berlin Wall such that, by allowing national borders to stabilize, it was instrumental in triggering a process of reform of the Wilhelminian legislation of 1913 that in 1999 led to the introduction of a milder form of *jus soli* conditional to the requirement of a foreign parent having been a resident for at least eight years.

The observed trends are equally varied in the rest of the world. The United States codified the *jus soli* principle in the Constitution in 1868 through an amendment aimed at protecting the birth rights of

slaves of African origin and has maintained this principle to the present day, consistent with its history of immigration and despite occasional attacks on it. In several Latin America countries, *jus soli* was adopted in the eighteenth century at the time they won their independence, in open contrast to the colonial powers that otherwise could have claimed their jurisdiction on the new born overseas. In the case of Africa, *jus sanguinis* provisions widely spread with the decolonization phase starting in the 1960s, in an effort to build a national identity.

DATA

The Citizenship Laws Dataset (Bertocchi and Strozzi 2009) allows us to reconstruct the post-war comparative history of citizenship legislation. The dataset collects information on citizenship at birth, as well as naturalization provisions, in 162 countries with reference to the years 1948, 1975, and 2001, in such a way that two stretches of approximately 25 years can be covered. The main sources for the data are the United States Office of Personnel Management (2001), the United Nations High Commissioner for Refugees (2003), and Weil (2001). With reference to citizenship at birth, countries are assigned to three groups: *jus soli* regimes, *jus sanguinis* regimes and mixed regimes. The third group includes those countries where elements of *jus soli* are recognized, albeit in a restrictive form, and coexist with varying degrees of *jus sanguinis*. For example, a frequent provision is double *jus soli*, another is *jus soli* for the child born in a given country from immigrants who are long-term residents. The first provision is more effective in countries with a relatively long history of immigration, whereas the second makes a difference for countries of more recent immigration.

Table 1 shows that by 1948 *jus soli* is adopted in 76 countries (47 percent of the total), *jus sanguinis* in 67 (41 percent), and a mixed regime in the remaining 19 (12 percent). In 1948, examples of *jus soli* are the United States, Canada, Australia, the United Kingdom and most Latin America countries, whereas *jus sanguinis* predominates in continental Europe, with the exception of France, which applies a mixed (double *jus soli*) regime. By 2001, *jus sanguinis* has become the most prevalent regime with 88 countries (54 percent), followed by *jus soli* with 39 (24 percent), and mixed regimes with 35 (22 percent). The increase in the share of *jus sanguinis* countries mostly manifests itself during the first sub-period through 1975, as is explained by adoption of this principle in several former African colonies. The expansion of mixed regimes is more recent and particularly marked in Europe, where they have been embraced both by formerly *jus soli* countries, such as the United Kingdom, and formerly *jus sanguinis* ones, such as Germany.

To summarize, the data reveal three patterns of transitional dynamics:

Table 1
The Evolution of Birthright Citizenship Laws Across the World Between 1948 and 2001

Citizenship laws in 1948	Citizenship laws in 2001			Total
	Jus sanguinis	Mixed	Jus soli	
Jus sanguinis	46	20	1	67
Mixed	11	6	2	19
Jus soli	31	9	36	76
<i>Total</i>	88	35	39	162

Source: Bertocchi and Strozzi (2009).

- Stability: some countries stick to their tradition, either a jus soli (e.g., the United States) or a jus sanguinis one (e.g., Switzerland).
- Inversion: some countries switch and this mainly occurs from jus soli to jus sanguinis (e.g., Sierra Leone).
- Convergence: some countries evolve toward a mixed system, either from a jus soli regime that they choose to restrict (e.g., the United Kingdom), or from a jus sanguinis regime that they mitigate with jus soli provisions (e.g., Germany).
- The current edition of the Migrant Integration Policy Index (MIPEX), first published in 2004 by the British Council, in addition to access to nationality, covers indicators concerning seven other policy areas directed at the integration of migrants, namely labor market mobility, family reunion, education, political participation, permanent residence, anti-discrimination and health (see Huddleston et al. 2011).

WHAT DRIVES CHANGE

Zooming in on Europe, by the end of the period, 20 of the 34 countries included in the dataset applied a mixed regime and 14 a jus sanguinis one, whereas jus soli was no longer adopted. In the past two decades, other reforms have been implemented. Ireland, which was still applying an almost pure version of jus soli (implying a potential for “citizenship tourism”), moved to a mixed regime in 2004. In 2006, Portugal introduced both double jus soli and jus soli for children of foreign residents. This combination had previously been enacted only by Belgium, whereas mixed regimes typically opt for either one. Double jus soli is adopted, for instance, in France, Luxembourg, and Spain, whereas jus soli for children of foreign residents appears in Germany, Ireland, and the United Kingdom. Greece went through a troubled period involving two reforms. A 2010 law encompassing both double jus soli and jus soli for children of foreign residents was enacted but never applied until a new 2015 law retained only the second provision.

The Citizenship Laws Dataset still represents the broadest attempt so far to capture the evolution of laws across the largest number of countries and over the longest time frame. In more recent years, a growing body of research has put forward additional classifications of the laws that regulate access to citizenship, often including finer degrees of differentiation, combining them with closely related measures of integration policies toward migrants. However, they only focus on the current legislation and keep track only of contemporary reforms. The main sources of current data are the following:

- The United States Law Library of Congress (2018) has compiled a list of 94 countries that grant citizenship by birth, with or without added conditions, as of 2018.
- The Global Citizenship Observatory (GLOBALCIT 2019) provides the Global Birthright Indicators database, with information on jus sanguinis and jus soli provisions for 177 countries as of 2016. GLOBALCIT is the successor of EUDO CITIZENSHIP, which provided the Citizenship Law Indicators (CITLAWS) for 42 European countries for 2011 and 2016 (EUDO CITIZENSHIP Observatory 2016; see also Bauböck and Vink 2013).

Within the socio-political sciences, several theories have aimed at explaining the dynamics of citizenship laws. The legal tradition of a country is considered a fundamental determinant of current laws, given the strong persistence of this type of institution. Immigration is also a potential primary cause of change. The effect of this factor is however a priori ambiguous. In fact, if on the one hand immigration can foster a more inclusive legislation toward newcomers through the adoption of jus soli elements, it can also induce restrictions in countries that start with an inclusive legislation. According to Weil (2001), the combination of these two opposing forces should induce convergence toward a mixed regime, whereas Bauböck et al. (2006) point to the de facto persistence of divergent trends and Goodman and Howard (2013) emphasize evidence of the surge of a restrictive backlash. Among other potential determinants, a role for the welfare state has also been recognized. Since citizenship can affect the ability to obtain benefits, in countries where the welfare state is more generous there may be a resistance to openness to foreigners (Joppke, 1998). However, in countries with low population growth, this consideration could be countered by the assessment of the potentially positive effect on the public finances of a relatively young immigrant workforce. Political factors can also come into play, since the presence of a consolidated democratic regime should favor the equal treatment of immigrants, and therefore the adoption of jus soli with the implied voting franchise. The stabilization of national borders should reduce the tendency to use jus sanguinis as a tool for defining a national identity, while a threat to their stability can produce opposite effects. As previously mentioned, such geo-political considerations turned out to be crucial in the face of two historical events that led to profound redefinitions of national borders: the period of decolonization that followed World War II and the collapse of the socialist system after the fall of the Berlin Wall. Cultural factors and a different view of the role of the state in establishing a national identity have also been proposed by Brubaker (1992) as an explanation for the different paths followed by France and Germany.

An empirical analysis of the role of the aforementioned factors is made possible by the Citizenship Laws Dataset, which covers the laws adopted by

Table 2
The Main Correlates of the Evolution of Citizenship Laws at Birth in the World in 1948–2001

Correlates	Effects on citizenship laws evolution		
	Exclusive	Inclusive	None
Legal tradition	√ (in jus sanguinis countries)	√ (in jus soli countries)	
Immigration	√ (in jus soli countries)	√ (in jus sanguinis countries)	
Degree of democracy		√	
Demographic stagnation		√	
Ethnic and religious conflicts	√		
Political borders instability	√		
Size of welfare state			√
Cultural diversity			√

Source: Elaboration on Bertocchi and Strozzi (2010).

the countries in the sample over a sufficiently long time frame (Bertocchi and Strozzi, 2010). As for the legacy of the previous legal tradition regarding citizenship, its persistent influence on current norms is confirmed by data. The potentially ambiguous impact of immigration reveals the prevalence of a restrictive impulse, since the data show that more immigration pushes countries toward jus sanguinis, rather than jus soli. However, the effect of immigration interacts in a complex way with that of the legal tradition. In other words, the impact of immigration depends on whether a country comes from a jus soli or sanguinis tradition. While jus soli countries react to immigration by integrating elements of jus sanguinis, jus sanguinis countries tend to do the opposite, even though the latter effect is milder so that the former prevails. Thus, the hypothesis of convergence toward a mixed regime as a result of immigration is hardly confirmed over the entire sample, and the evidence shows instead that the net effect of immigration is an impulse toward exclusion. Similar conclusions are suggested by Strozzi (2016) using the MIPEx index of access to nationality.

It should be emphasized that the above pattern regarding the effect of immigration may not hold true for the European case, in which a trend toward a broad convergence to mixed regimes is apparent in recent years, and possibly sustained by the concomitance of high degrees of democracy and geo-political stability. Indeed, the latter two factors are correlated with a more inclusive legislation. As for the other relevant factors, the size of the welfare state does not represent an obstacle to the greater inclusion of immigrants through the granting of citizenship through jus soli, possibly because many of the countries with expensive welfare systems experience a simultaneous demographic stagnation. Cultural diversity, meas-

ured with religious affiliations and ethno-linguistic fragmentation, does not exert a significant residual effect.

The main correlates of the observed evolution of citizenship laws and the direction of their effects are summarized in Table 2.

In conclusion, evidence documents that citizenship laws have responded endogenously and systematically to historical, economic and institutional factors. Innovative legal provisions have even been envisioned as a result. In recent years, a new conditional form of jus soli—known as jus culturae—has been contemplated, and sometimes adopted, in a few countries. This provision grants citizenship at a relatively early age to a child born in the destination country of an immigrant parent, provided that the child has attended (or completed) school in the destination county itself. While jus culturae actually represents a path to early naturalization through socialization, it can be likened to jus soli in terms of its effects. Examples of adoption of jus culturae, in varying combinations with more conventional legal provisions, are France, Latvia and Portugal, whereas Italy has been debating whether to mitigate its strongly jus sanguinis-oriented regime by adopting jus culturae. While a delay in the access to citizenship for children, in their formative years, may make a difference when compared to the effects of access at birth, jus culturae may represent a viable alternative to the latter in cases where a particularly restrictive legislation is combined with strong opposition to its relaxation.

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Christina Gathmann and Ole Monscheuer

Does Citizenship Foster Economic and Social Integration?

International migration has risen substantially over the past decades. Today, three-and-a-half percent of the world’s population lives in a country other than their birthplace (United Nations 2020). At the same time, there is growing concern and debate in sending and especially in receiving countries about the economic and social consequences of migration. Populist parties, support for Brexit and the current US President have all benefitted substantially from the unease many people associate with rising immigration flows.



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Germany is a good example of such tensions: it has recently become the top destination for immigrants but has also witnessed fierce debates about how to manage and regulate immigration flows. Around 600,000 immigrants have immigrated to Germany each year since 2000. Since 2012, annual influxes have risen to over a million—turning Germany into the most popular destination country in the world—even surpassing the United States (see Figure 1).¹ One might think that the rapid rise in the number of immigrants since 2012 is just

a consequence of Germany’s liberal refugee policy as compared to other countries. Yet, Germany re-

¹ The United States remains the country with the highest number of resident immigrants because of persistently high immigration flows in the past (United Nations 2020).

mains the top destination for immigrants even after subtracting the number of reported asylum seekers (Gathmann and Monscheuer 2020b). A consequence of these sizable influxes is that 15% of the German population is now foreign-born—a number comparable to the percentage of foreign-born people in the UK or the United States. Many countries in Europe, such as France, Sweden or Switzerland, have accumulated similar immigrant populations.

ONGOING DEBATES ON IMMIGRATION AND INTEGRATION

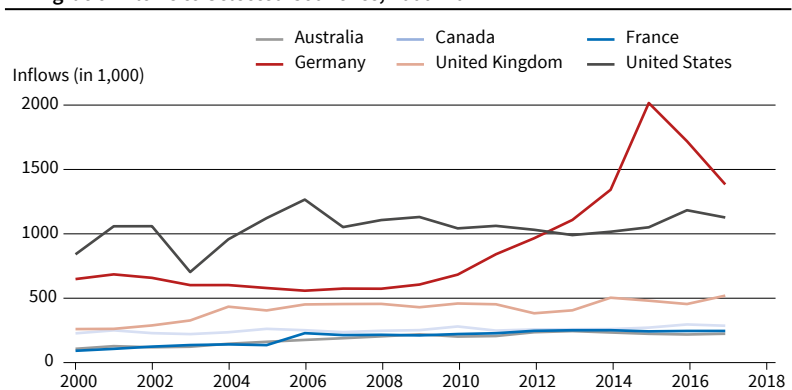
The political conflict and public debate concerning immigration in Europe has largely centered on refugees, and how to regulate the influx from countries undergoing military or political conflict or suffering from economic hardship. While these debates are important, there is another side to the coin: how to ensure that those arriving in a country actually integrate and become active members of the society and contribute to its economic prosperity and social cohesion?

The record in many European countries, however, is less impressive: immigrants have lower employment and higher unemployment rates; they also depend more on the welfare state than natives. Often enough, the disadvantages persist into the second and even third generation with lower educational attainment and worse labor market performance than their native peers. Many point out, however, that in countries like Australia, Canada or the United States, large-scale immigration and long-term prosperity seem to go hand in hand with sizable benefits for the immigrant and the destination country alike.

Yet, what explains these significant differences? Is it because large-scale immigration has been an integral part of the economic and social fabric in Australia, Canada and the United States? The famous inscription at the Statue of Liberty surely suggests a more welcoming attitude toward immigrants: “Give me your tired, your poor, your huddled masses yearning to breathe free, the wretched refuse of your teeming shore. Send these, the homeless, tempest-tossed to me. I lift my lamp beside the golden door!” (written by the American poet Emma Lazarus).

An alternative view is that traditional immigration countries have better policies in place to make immigrants succeed after their arrival. A cornerstone of a country’s approach to immigration is its citizenship policy—which defines under what conditions immigrants and their offspring can become full members of the receiving society with all rights and responsibilities. While all developed countries offer the

Figure 1
Immigration Flows to Selected Countries, 2000–2017



Source: OECD International Migration Database.

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option to naturalize, they differ substantially in their eligibility requirements, in particular with respect to the number of years an immigrant has to first reside in the destination country. At the one end of the spectrum, Canada or the United States allow immigrants to naturalize after only four or five years of residency. On the other hand, countries like Austria, Germany or Switzerland first required ten or more years of legal residency. Yet, the countries differ along many lines and not only in terms of their citizenship policy, which influences the number and type of immigrants as well as their economic and social well-being after arrival.

Moreover, it remains an open question whether citizenship and naturalization actually cause successful integration, or whether it is only those immigrants who have the best prerequisites and willingness to integrate who naturalize. In the first case, citizenship acts as a catalyst for integration, improving the economic and social position of immigrants with possibly positive spillover effects on the family and beyond. In the second case, naturalization just acts as a crown bestowed on immigrants who have already integrated successfully into the country. The question is important for policy: If citizenship is a catalyst for integration, then liberalizing citizenship laws will improve integration along economic and possibly other lines to the benefit of both immigrants and the destination country. However, if citizenship by itself does not encourage integration, then liberalizing citizenship laws will have little benefit and might just increase the fiscal burden if naturalized immigrants are more likely to depend on welfare transfers, for example.

Our work demonstrates that access to citizenship is an important pillar to foster the integration of immigrants in the receiving country. In particular, we show that Germany's liberalization of its citizenship law has increased incentives for immigrants to integrate—resulting in much better labor market performance and the postponement of early marriages and childbearing. The positive effects of citizenship are especially strong for immigrant women, which is good news, since they are often economically dependent on and tied to their family or community of origin.

GERMANY'S CITIZENSHIP REFORMS

Before 1990, German citizenship was closely tied to ancestry and ethnic origin (*jus sanguinis*) as laid down in the law of 1913. Naturalization criteria for immigrants who could not demonstrate German ancestry did not exist and actual naturalizations were rare. The Federal Naturalization Guidelines of 1977 summarize the official view at the time quite well: “The Federal Republic of Germany is not a country of immigration; it does not strive to increase the number of German citizens by way of naturalization [...]. The granting of German citizenship can only be considered if a public interest in naturalization exists; the personal desires

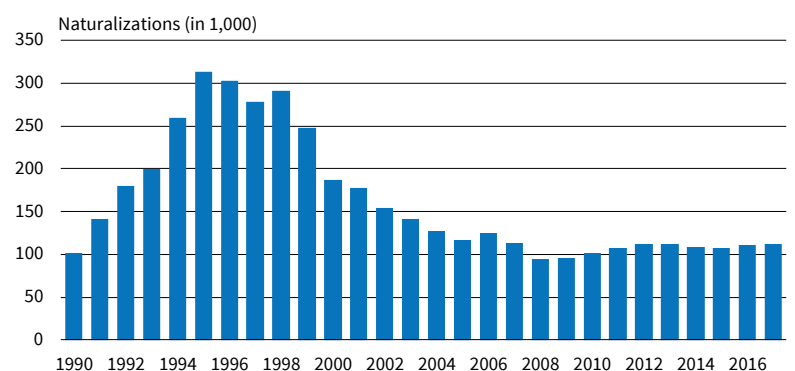
and economic interests of the applicant cannot be decisive.” (Hailbronner and Renner 1992, pp. 865-6).

Passage of the Alien Act (*Ausländergesetz*) by the federal parliament in April of 1990 marked a turning point in Germany's approach to immigration and citizenship. The reform, which came into effect on January 1, 1991 defined, for the first time, explicit rules and criteria for naturalization. Most importantly, the new law imposed age-dependent residency requirements for citizenship. Adult immigrants who arrived in Germany when they were fifteen years or older faced a residency requirement of 15 years before they could apply for citizenship. Teen immigrants who arrived between the ages of seven and fourteen in turn could apply for German citizenship after only eight years of residence. Child immigrants who arrived in Germany before the age of seven had to wait until their sixteenth birthday before they became eligible for naturalization. In addition, eligible individuals could include their spouses and dependent children in their application if they themselves did not satisfy the eligibility criteria. Immigrants needed to satisfy several additional criteria: they had to renounce their previous citizenship (unless they were EU citizens); satisfy economic self-sufficiency (as adults) or completed at least six years of schooling in Germany (for teens); have no severe criminal record; and declare their loyalty to the democratic principles of Germany's basic law (see Gathmann and Keller 2018 for details).

The Citizenship Act (*Staatsangehörigkeitsgesetz*) of 1999 further liberalized access to citizenship. Since 2000, all immigrants can naturalize after eight years of residency or after seven years if they have successfully completed an integration course; they also have to be at least sixteen years old. In addition, the 2000 reform introduced citizenship by birth where children born in Germany after January 1, 2000 received citizenship automatically if their parents had been legal residents for at least eight years.

The liberalization of Germany's citizenship law in 1991 and again in 2000 is reflected in the rise of the number of naturalizations in Germany (see Figure 2). Prior to the first reform, fewer than 20,000 persons be-

Figure 2
Naturalizations in Germany, 1990–2017



Source: Federal Office for Migration and Refugees (2008), Federal Statistical Office (2019).

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came naturalized on average each year. After the 1991 reform, naturalizations reached almost 300,000 per year during the mid-1990s (these numbers also reflect the strong influx of ethnic Germans during that time who could naturalize after three years of legal residency). Following the 2000 reform, naturalizations jump to over 180,000 and then gradually settle at around 100,000 per year.

Yet, the propensity of first-generation immigrants to naturalize in Germany is, at 35-40 percent, still considerably below the naturalization rates of about 60 percent of first-generation immigrants in the United Kingdom and over 80 percent in Canada (OECD 2011). In light of the substantial benefits from citizenship, especially for non-EU immigrants, the low increase indicates that immigrants are either not fully aware of the benefits of becoming naturalized citizens, or that they face some uncomfortable costs, such as renouncing their previous citizenship.

CITIZENSHIP FOSTERS ECONOMIC INTEGRATION, ESP. FOR WOMEN

To pin down the effects of citizenship, we use the fact that first-generation immigrants who arrive in Germany in the same year face very different residency requirements. Some had to wait only eight years, whereas others waited for up to sixteen years before they became eligible for citizenship. We can distinguish between three groups: first-generation immigrants who arrive in Germany before the age of 8 have to wait until they turn sixteen—hence, their residency requirement varies between eight and sixteen years. Individuals who arrive between the ages of eight and fourteen have to wait for just eight years since the 1991 reform. Finally, immigrants who arrive at the age of fifteen or older have to wait fifteen years if they arrived before 1985, but only eight years if they arrived during or after 1992 (see Table 1).

To assess how different waiting periods for citizenship eligibility affect economic assimilation, we focus on three measures of labor market success measured between 2005 and 2010: employment, immigrant earnings, and their self-sufficiency, i.e., whether immigrants utilize welfare or unemployment benefits

(Gathmann and Keller 2018). One concern often raised in the public arena is that immigrants overuse the welfare state and therefore impose a fiscal burden on the host country. We find no evidence for such a concern: immigrants who are eligible for citizenship or who have naturalized do not rely on public welfare assistance more than other immigrants.

Yet, we find significant positive effects on employment and wages—especially for women. Immigrant women who become eligible for citizenship have large and persistent income gains, whereas eligible men have much more modest earnings gains. Facing a residency requirement of eight years rather than fifteen years raises labor market earnings by 11.2 percent. The main reasons for these earnings gains are changes in labor force attachment: women are much more likely to be employed and work more hours per week, are more likely to be employed full-time and have longer job tenure. Given the sizable wage penalties of part-time work and jobs with high turnover in most countries including Germany, changes in labor supply are one important channel for the large earnings changes among women.

Women’s earnings also catch up because of upward mobility into better-paid occupations and industries over time. Following citizenship, women are less likely to be employed as blue-collar workers but are more likely to be employed as white-collar workers. We do not see this pattern for men. Finally, the jobs women hold have better working conditions: they are more likely to be permanent and long-term. Their employers are typically larger and pay higher wages. Men mostly gain because they are less likely to be self-employed in low-paid jobs following citizenship and, like women, are more likely to have a permanent work contract and to keep a job in the same firm.

How can we explain these sizable gains in the labor market? The first reason is that citizenship changes the type of jobs available to immigrants and enhances their career options. Host-country citizenship is often a prerequisite for a number of attractive civil servant or public sector jobs. In Germany, for instance, these restrictions applied to a much wider range of occupations: prior to 2012, non-EU citizens had only restricted access to regulated professions

Table 1
Age and Year of Arrival and Residency Requirements for Citizenship in Germany

Group	Age of Arrival in Germany	Residency Requirement for Citizenship	Access to Citizenship at Age
Child Immigrant	Ages 0-7	9-16 Years (longer for arrival cohorts 1975-1982)	Age 16 (older for arrival cohorts 1975-1982)
Teen Immigrant	Ages 8-14	8 Years (9-15 years for arrival cohorts 1975-1982)	Ages 16-22 (older for arrival cohorts 1975-1982)
Adult Immigrant	Ages 15-22	15 Years (9-14 years for arrival cohorts 1986-1991)	Ages 30-38 (younger for arrival cohorts 1986-1991)
		8 Years (arrival cohorts 1992-2000)	Ages 23-30 (arrival cohorts 1992-2000)

Source: Own compilation of the authors.

like lawyers, notaries, pharmacists or physicians. More generally, citizenship removes restrictions on career mobility that immigrants might have faced in the labor market. Prior to 2005, for example, a temporary permit did not allow immigrants to be self-employed for the first eight years or switch occupations within the first three years. Citizenship now enables immigrants to work in any job (subject to certification requirements) at any time and place. To the extent that the wider range of job and career options offer better pay or working conditions than jobs available to the average immigrant, naturalization improves the labor market prospects of immigrants.

Moreover, employers in the private sector might be less willing to invest in a foreign employee who might leave the country sometime in the future. Through naturalization, the immigrant provides a signal of long-term commitment to remain in the destination country—and thus eliminates explicit or implicit barriers to training or career mobility within the firm.

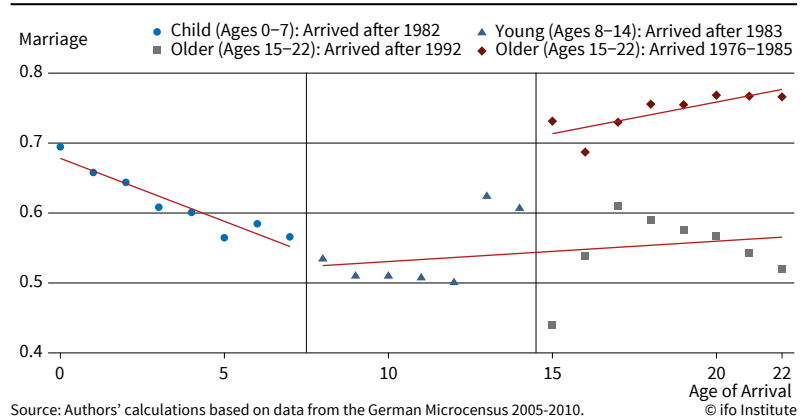
Better career and training opportunities will make it more attractive for immigrants to invest in formal education and skills to take advantage of these opportunities. The faster an immigrant becomes eligible for citizenship, the longer an immigrant can reap the benefits of such higher returns on skill. In addition to these monetary incentives, there might be an important psychological motive for implementing short waiting periods (see Hainmueller et al. 2016 for a similar argument).

The option of becoming a naturalized citizen signals to the immigrant that he or she can become a full member of the host society with all rights and responsibilities. As a result, an immigrant with faster access to citizenship might feel more inclined to identify with the receiving country and follow its perceived roles in terms of labor force attachment, the importance of education or the need to speak the local language. Moreover, a naturalized citizen might not only feel more welcome, but might actually be more accepted by natives and face less discrimination in the labor market.

CITIZENSHIP ALTERS MARRIAGE AND FERTILITY BEHAVIOR

The effects of citizenship are not restricted to the labor market but also shape marriage and child-bearing choices (Gathmann, Keller and Monscheuer 2020). Both men and women postpone marriage when they can naturalize earlier. Figure 3 shows an amazing correlation between the residency requirement, which depends on the age of the arrival (shown on the x-axis), and the likelihood of being married between 2005 and 2010 (depending on age, year of arrival and region of origin, among others). In the group of child immigrants (on the left of Figure 3), the likelihood of being married decreases with age of arrival—since the residency requirement declines from sixteen years

Figure 3
Age of Arrival, Residency Requirements and Marriage



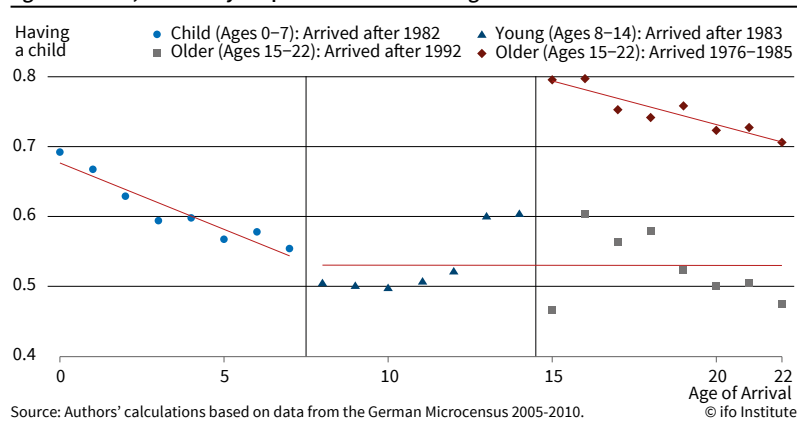
Source: Authors' calculations based on data from the German Microcensus 2005-2010.

(if an immigrant arrived before their first birthday) to eight years (for an arrival at age eight). The marriage probability is very similar in the group of teen immigrants (in the middle of Figure 3), who all face eight years of residency requirement since the 1991 reform. For adult immigrants (on the right of Figure 3), the residency requirement varies from 15 years for earlier arrivals (represented by the green diamonds) to eight years for later arrivals (represented by the blue squares). There is again a clear effect that the marriage probability is higher the longer the residency requirement is.

Since eligibility has few effects on marital stability and cohabitation, the main take away is that immigrants postpone marriages in order to search longer for a suitable match. These effects are especially notable for Turkish women who used to marry at a very young age of around 20. The postponement effect associated with citizenship reduces the immigrant-native gap in women's age for first marriage by 1.3 years or 20 percent. Interestingly, immigrants with faster access to citizenship do not have higher intermarriage rates or fewer endogamous partnerships. This result is surprising since intermarriage rates are often taken as evidence for a successful social integration.

Citizenship also has implications in terms of timing of fertility. Figure 4 shows how the age of arrival,

Figure 4
Age of Arrival, Residency Requirements and Having a Child



Source: Authors' calculations based on data from the German Microcensus 2005-2010.

which is again associated with different residency requirements, correlates with the likelihood of having a child. Controlling for age and years spent in Germany, immigrants who can naturalize earlier are less likely to have a child than immigrants facing a longer residency requirement.

Because not all women in our sample have reached menopause, the declining number of children reflects in part a postponement of births among immigrants. In line with such an interpretation, we document a sizable increase in the mother's age at the time of her first child's birth. Both the decline in fertility and the rise in the mother's age at the time of her first child's birth indicate that immigrants conform to the fertility choices of natives: if immigrants face a residency requirement of eight years rather than fifteen years, the immigrant-native gap in total fertility declines by up to 20 percent. The immigrant-native age gap in the mother's age at the time of her first child's birth is about four years and declines by 31 percent with an easier access to citizenship.

Overall, access to citizenship shows that immigrants more closely match natives' choices in terms of when to marry and when to have children—closing around one-third of the immigrant-native gap. Three mechanisms are important to understand the effects on marriage and fertility: sizable earnings gains, improvements in skills, and social norms. The better economic opportunities associated with citizenship, especially for immigrant women, raise the opportunity costs of early marriage and childbearing. Additional investments in human capital and language skills, in turn, influence not only the set of potential partners one meets but also the opportunity costs of early marriage and childbearing. Finally, citizenship may influence which norms or values immigrants may choose to follow or feel obligated to. Immigrants are exposed to both the norms and values of their country of origin as well as those of the host country. Access to citizenship most probably increases the likelihood of conforming to the host country's norms and values relative to those of the country of origin because immigrants feel more welcome or less discriminated in the host country. All three arguments provide a potential explanation for the observed effect that a more liberal citizenship policy speeds up the social integration of immigrants.

IMMIGRANTS RESPOND DIFFERENTIALLY TO CITIZENSHIP

Social integration outcomes vary substantially with the cultural background of the immigrant. Immigrants who originate from traditional cultures with high fertility rates are more likely to be married and have more children than immigrants from countries with low fertility rates. Even more importantly, immigrants

also assimilate more slowly under a liberal citizenship policy. This trailing pattern indicates not only that the speed of assimilation varies substantially across immigrant groups, but also that differences in marriage and fertility choices between natives and some immigrant groups will persist into the next generation.

Have Germany's citizenship reforms really shifted the perceptions and decisions of immigrants or just reduced discrimination by natives? To test who adapts, we make use of the particular timing of the reforms—which came as a complete surprise for many immigrants. All immigrants entering Germany before 1990, for instance, arrived under the assumption that naturalization was unattainable—until the first reform passed in 1990 and the road to citizenship suddenly opened up. For other immigrants arriving after 1990, the actual residency requirement they had to fulfill was much shorter than the one they had expected upon arrival. Now take two immigrants who both become eligible for citizenship after X number of years. If citizenship affects immigrants' choices, an immigrant who is surprised upon arrival in the host country with the option to become a naturalized citizen much sooner than expected would probably make different decisions than an immigrant who knew their actual waiting period prior to arrival in the host country. Our estimates indicate that immigrants who were surprised by the reforms do not conform in their fertility and marriage choices to natives—in contrast to immigrants who had exactly the same actual waiting period but knew it ahead of time.

Hence, the better economic and social integration outcomes associated with a more liberal citizenship policy are the result of changes in perceptions and decisions made by eligible immigrants, and not because natives discriminate less against naturalized citizens. It also shows that the future expected benefits of citizenship have a strong influence on long-term decisions, such as when to marry or have children.

DISCUSSION

Germany's liberalization of its citizenship law provides powerful evidence that citizenship acts as a powerful catalyst for economic and social integration (Gathmann and Monscheuer 2020a). It has positive effects on earnings and labor supply, especially among women and improves the human capital base of eligible immigrants. These shifts in the labor market spill over into marriage and fertility choices, reducing the likelihood of very early marriages and childbearing. Immigrant women adapt their behavior more in response to citizenship, which substantially improves their relative economic and possibly social position in the receiving country. As such, access to citizenship contributes to gender equality in the immigrant population. Overall, a liberal citizenship policy is a powerful tool changing the perceptions and decisions

of immigrants both economically and socially even in countries with traditionally restrictive immigration policies.

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Intended and Unintended Consequences of Birthright Citizenship

“The most certain prediction that we can make about almost any modern society is that it will be more diverse a generation from now than it is today” (Putnam 2007, p.137). Indeed, children with a migrant background constitute the fastest-growing segment of the population in many countries across the developed world, shaping these societies for the future (Dustmann et al. 2012). A successful integration of immigrant children¹ into host countries is therefore essential. Studies of recent first- and second-generation immigrants, however, do not paint a rosy picture: the socioeconomic performance, in terms of education, employment or earnings, of most immigrant groups and their descendants, is, on average, worse than that of the native population (Algan et al. 2010). Unsurprisingly, tackling this disadvantage has become a key priority for many governments.

One important instrument of integration policy is immigrant children’s access to host-country nationality. Birthright citizenship has historically been in place in the United States, Canada and the United Kingdom and has recently been introduced in several European countries (e.g., Belgium, Germany, Greece, Portugal). Despite its popularity, it is subject to much controversy. For example, the ongoing debate about the reform of the Italian naturalization law is fueled by fear and resentments. Opponents of birthright citizenship have described it as a “magnet for illegal immigration,” cited the risk of national identity dilution (Huntington 2004; Wilcox 2004; Jahn 2014), and raised concerns about a shift in future voter composition (Razin et al. 2014). In contrast, proponents have argued that it is one of the most powerful mechanisms of social inclusion.

¹ We will use the term immigrant children and children with migrant background interchangeably, despite the fact that some children have no own migration experience.

This controversy is surprisingly uninformed by reliable evidence on the economic and social consequences of birthright citizenship for the affected generation. With this article, we aim to provide an overview of the benefits and possible threats of birthright citizenship. For this purpose, we summarize the findings of three of our recent papers studying the case of Germany, a country that changed its regulation regarding birthright citizenship at the beginning of the millennium. The interesting aspect of these papers is that they cover a broad array of outcomes—economic, behavioral and social outcomes—and follow children from birth until adolescence. As such, they provide a comprehensive and dynamic look at the effects of birthright citizenship for the population at risk.

BIRTHRIGHT CITIZENSHIP AS AN EARLY LIFE INTERVENTION

Before turning to the empirical evidence, let us briefly reflect the underlying rationale for why birthright citizenship may enhance integration. Endowing immigrant children with citizenship rights at birth is an early life intervention representing a positive endowment shock. Citizenship improves immigrants’ professional opportunities. In Germany, it opens the door to any job requiring civil servant status, entitles individuals to work in any EU country, and allows visa-free entry to many other countries. Citizenship may further act as a signal to employers that the prospective employee is committed to remaining and integrating oneself into the host society. Existing evidence suggests that naturalized immigrants, compared with their non-naturalized peers, earn more (Chiswick 1978; Steinhardt 2012), have higher job-finding rates (Fougere and Safi 2009; Gathmann and Keller; forthcoming) and experience steeper wage-tenure profiles (Bratsberg et al. 2002). In other words, birthright citizenship brightens immigrant children’s future professional outlook and may thus act as a catalyst for human capital investments in immigrant families.

Birthright citizenship may act along a variety of other margins. Immigrant parents may perceive birthright citizenship as a “sign of goodwill” by the host country, and thus actively promote the integration of their children into the host society.² Citizenship

²Avitabile et al. (2013) show that foreign-born parents are more likely to speak the local language and to interact with the local community if their children enjoy birthright citizenship rights.



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may further affect the extent to which immigrants adopt the ethnic identity of the host country and this in turn may stimulate assimilation and integration. Moreover, natives may treat immigrants differently based on their citizenship status. Reduced discrimination may enhance immigrants' integration opportunities directly and indirectly by shaping immigrants' reciprocal behavior.

Nevertheless, birthright citizenship may also trigger some reactions that have been neglected so far in the scientific and political debate. A large share of the immigrant population stems from cultures where traditional values and norms still prevail. The most prominent example for this are conservative gender norms resulting in large gender inequalities in education, employment and political outcomes. Birthright citizenship and the attached economic and political opportunities may thus pose (or may be perceived as) a threat to the ethnic and cultural identity of immigrant families. This may particularly be true for immigrant daughters, who often act as the "keepers of the culture" (Suarez-Orozco and Quin 2016). As a result, birthright citizenship may not have the intended consequences, but may instead backfire due to immigrant parents constraining their daughters' choices and shielding them against the influence of the host society. As a result, immigrant girls may end up "caught between cultures" and struggle with the expectations of the opposing cultures.

REFORM OF THE GERMAN NATURALIZATION LAW

In three recent papers, we have set ourselves the objective to gauge the consequences, both the intended and the unintended ones, of birthright citizenship. For this purpose, we have relied on the reform of the German naturalization law. Until 1999, citizenship was granted according to "ius sanguinis"—that is, children became German citizens only in cases in which at least one parent held German citizenship. As of January 1, 2000, the prevailing regime changed to "ius soli," granting each child born in Germany a conditional right to German citizenship at birth. The probability of being a citizen at birth jumped by more than 50 percentage points for second-generation immigrant children born post-reform. A nice feature of the reform is that it occurs in between school year cutoffs. This means that immigrant children born six months before and after the cutoff will typically be in the same grade in school, while having different probabilities of being a German citizen at birth.³

The reform constitutes a large exogenous shock to the probability of being German citizen for many second-generation immigrant children and thus renders itself as a source of identification. Comparing the children born just before and after the reform allows drawing causal conclusions regarding the ef-

fects of birthright citizenship on all kinds of child outcomes.⁴ In what follows, we summarize the effects on immigrant children's educational outcomes and their cooperative behavior toward their native peers. We end by discussing the case of immigrant girls from more traditional cultures and shed some light on the unintended consequences for their well-being and integration.

INTENDED CONSEQUENCES

As outlined above, birthright citizenship may trigger human capital investments by immigrant families both in the short- as well as in the longer-term. It is well understood that human capital investments are hierarchical, with those made early in a child's life affecting subsequent ones (Cunha and Heckman, 2007). Take for example, preschool enrolment: attending preschool may promote a child's school readiness (Cornelissen et al. 2018; Felfe and Lalive 2018) and thus influence parents' decisions regarding primary school enrollment. Age at school entry, in turn, may affect children's subsequent scholastic performance and thus secondary school track choice. In light of this hierarchical structure, two scenarios for the effects of birthright citizenship are conceivable. On the one hand, parental choices regarding their children's early education, e.g., sending them to preschool, may result in improved child outcomes in the short run that in turn trigger subsequent parental investments that promote children's education in the long run. On the other hand, returns on investments may not meet parents' expectations (e.g., in form of improved teacher evaluations). If this is the case, parental integration efforts may fade out over time, and no lasting effect on children's education would be observed.

To study both children's short- and longer-term educational outcomes, Felfe et al. (2020a) draw upon two administrative data sources. Specifically, they use data from school entry examinations and school registers covering the first three educational phases—preschool, primary school and secondary school. The first key result of their paper is that the introduction of birthright increased immigrant children's preschool enrolment by 3 percent. Turning to the developmental outcomes measured at the end of the preschool period, the study shows that the birthright citizenship reform increased immigrant children's German language proficiency by 6 percent and their socio-emotional maturity by 2 percent. As a result, immigrant children entitled to birthright citizenship are likely to move on earlier from preschool to primary school. The educational advantages last throughout primary school and are visible in a reduced probability of grade retention by 25 percent. Finally, and most

³ The interested reader may refer to Felfe et al. (2020a) to inquire more detailed information about the reform.

⁴ To further get hold of any confounding variables, one may further draw upon a control group. The control may vary depending on the available data source. Natural candidates are native children or immigrant children born in earlier years.

importantly for immigrants' longer-term integration, the study shows a significant increase of 39 percent in immigrant children's probability of attending the academic track of secondary school. In fact, the prevailing immigrant-native gap in academic track attendance narrows by almost half.

These results are sizeable, also in comparison to the effects of alternative early life interventions. For instance, for the case of Germany, public preschool attendance has been shown to close the immigrant-native gap in school readiness on average (Cornelissen et al. 2018). In comparison, birthright citizenship closes this gap by more than half. Head Start, a US American preschool program available free of charge to low-income families, closes one-fourth of the gap in test scores between Hispanic children and non-Hispanic white children and two-thirds of the gap in the probability of grade retention (Currie and Thomas 1999). In comparison, birthright citizenship closes the immigrant-native gap in grade retention fully. The effect of birthright citizenship is furthermore comparable to the effect a randomized tutoring and career counseling program provided to high-ability students in Italy: Carlana et al. (2020) show that this program fully closes the academic-track enrollment gap, but only for the case of boys.

Digging deeper into gender differences, Felfe et al. (2020b) uncover that the positive effects of birthright citizenship are an entirely male phenomenon. Drawing upon self-collected data on the full population of ninth- and tenth-graders in eight German cities, they confirm a positive effect on immigrant children's educational achievement at the end of compulsory schooling. Specifically, birthright citizenship led to a near-closure of a substantial pre-existing educational achievement gap (in core subjects, such as German and math) between them and their native peers. Breaking the result down separately by gender, the reform's educational effect turns out to be entirely explained by male immigrants catching up educationally with their native peers.

The core interest of Felfe et al. (2020b), however, lies in understanding whether birthright citizenship helps in overcoming barriers and whether it fosters cooperation between immigrants and their native peers. As outlined above, endowing immigrant children with the same economic and political opportunities as their native peers may enhance immigrant children's identification with the host country, reduce discrimination by native peers and maybe most importantly, reduce the social distance. To elicit children's willingness to cooperate, Felfe et al. (2020b) enriched the data collection with a lab-in-the-field experiment. They asked all survey participants to take part in an investment game, distinguishing between investment decisions when interacting with children with and without a migrant background. With this data at hand, they were able to gauge in-group/out-group cooperation between immigrant and native

youth. They established a marked gap between intra- and inter-group cooperation among immigrant children born pre-policy. To be precise, immigrant children, both boys and girls, were significantly more inclined to transfer some of their initial endowment to children with whom they shared an immigrant identity than to native German children. The introduction of birthright citizenship significantly affected immigrant children's in-group/out-group behavior, but in a gender-specific way. Immigrant boys significantly reduced their discriminatory behavior against native children. In fact, immigrant boys born under *jus soli* were almost equally inclined to invest toward immigrants and natives. For immigrant girls, birthright citizenship did not seem to matter at all: the in-group/out-group gap was strong and persistent independent of birthdate and citizenship status. Investigating the underlying motives for cooperation, they find that introducing birthright citizenship caused male, but not female, immigrants to significantly increase their trust toward natives. This result aligns well with the results on immigrant children's educational progress as education has been argued to be the single best predictor of trust (Putnam 2000; Uslaner 2008). Alternative mechanisms, such as a stronger ethnic identification with the host country or less discrimination by native peers, did not seem to play a major role.

The results so far raise the question of why boys benefit from introducing birthright citizenship, as well as from other early interventions (Carlana et al. 2020), but girls do not. The above-mentioned fact that many immigrants stem from rather traditional cultures, where conservative gender roles prevail, may offer an explanation. The economic and political opportunities attached to citizenship may be opportune for immigrant boys to reach the outcomes desired by their parent—men ought to be professionally successful and act as the main breadwinner of the family. Immigrant girls, however, ought to take care of the family and preserve the cultural values of their country of origin. As a result, birthright citizenship and the attached opportunities may lead to intra-familial tensions and a clash of cultures where immigrant daughters are the losing party: they may raise their professional aspirations, but at the same time suffer from disillusionment in realizing these objectives given pressure from the parents. As a result, birthright citizenship may have the unintended consequence of reducing immigrant girls' well-being.

UNINTENDED CONSEQUENCES

Taking advantage of the self-collected data set mentioned above, Dahl et al. (2020) test this idea and find that birthright citizenship lowers subjective well-being for immigrant girls: Self-reported life satisfaction falls by almost a third of a standard deviation for immigrant girls born after the reform. The effects are concentrated among immigrant daughters in Muslim

families, where cultural differences relative to German mainstream culture are starkest. Sadly, the implied effect is similar in magnitude to the effect of medium-level depression in terms of life satisfaction (Frijters et al. 2020).

A series of additional results support the notion that birthright citizenship raises intergenerational identity concerns, in particular among Muslim families. First, citizenship results in disillusionment for Muslim immigrant girls, where they believe the chances of achieving their educational and career goals are lower. To be precise, Muslim immigrant girls exposed to the citizenship reform are more likely to aspire to get tertiary schooling, but the odds they place on reaching their educational goals fall. Second, parental investments in mainstream culture fall for Muslim immigrant girls, whereas investments in the traditional culture rise. Starting with labor market investments, Muslim immigrant girls who have access to birthright citizenship are significantly less likely to receive parental support with their homework and learning compared to their non-naturalized peers. Turning to the transmission of cultural heritage, Muslim immigrant parents are more likely to never speak German with their daughters born after the reform. In line with this, the odds of having to forgo a career for family as reported by Muslim immigrant girls rise.

These results align well with the idea that parents undermine the assimilation and integration of their daughters, but not their sons, in response to the increased opportunity set that citizenship provides. In fact, immigrant parents seem to succeed in their efforts. Their daughters are less likely to self-identify as German, their belief that foreigners can have a good life in Germany falls, they are less likely to participate in after-school social activities with natives and are less likely to have a friendship network they can turn to for support when they experience challenges.

LESSONS TO BE LEARNED

Taken together, birthright citizenship causes both intended and unintended consequences. On the one hand, birthright citizenship exerts effects on immigrant children's educational achievements, which are not only desired, but also predicted by neoclassical theory. Importantly, while birthright citizenship causes effects that are comparable to those of well-known educational interventions, such as universal preschool and targeted tutoring, it is arguably associated with much lower costs. The main direct costs of "ius soli" are administrative, which are low given that citizenship is simply recorded on a child's birth certificate. By contrast, alternative educational interventions involve direct costs such as the hiring of new personnel, the construction or expansion of childcare facilities, or the training of tutors. For example, in Germany the costs of a preschool slot amount to approximately 850 euros per month and, thus, to more

than 30,000 euros per child who attends preschool between ages three and six. In addition, there seem to be spillover effects on immigrant children's social integration. On the other hand, birthright citizenship may lead to intra-familial conflicts, forcing immigrant daughters to accept a more traditional gender role, thus limiting thus their economic integration. Importantly, these effects cannot be predicted by neoclassical theory, but require a model that considers the transmission of cultural norms and the prevalence of identity concerns therein.

In sum, a comprehensive and a dynamic analysis of the effects of integration policies is warranted in order to gauge their effectiveness and to avoid any undesired effects. In addition, policy makers should be sure to consider the norms and values prevalent in both the host country and the main countries of immigrant origin.

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Paolo Pinotti

The Effect of Immigrant Legalization on Crime

Legal status deeply affects immigrants' lives in several ways, as discussed at length throughout the present paper. In particular, legal status improves migrants' employment opportunities, access to social assistance, and child educational opportunities. All these benefits deriving from legal status may, in turn, influence immigrants' propensity to commit crimes.

The economic model of crime predicts that individuals decide whether or not to engage in crime by comparing the expected benefits and expected costs of criminal activities. The expected costs include the direct costs from punishment, if apprehended, as well as the "opportunity cost" of foregone alternative income opportunities. For the reasons mentioned above, legal status clearly improves these alternative opportunities, and should therefore result in a decline in the probability of committing crimes.

As we move from theory to empirics however, it is difficult to quantify the response of criminal behavior to the acquisition of legal status for two main reasons: First, immigrants without legal status do not appear in official statistics; second, even if we observe systematic differences in criminal behavior between regular and irregular immigrants, such difference cannot be immediately attributed to the (causal) effect of legal status, since regular and irregular immigrants presumably differ along other dimensions that are likely correlated with criminal behavior (e.g., age and education).

I discuss these issues in the context of Italy, where the combination of strong migration pressures, strict quotas regarding legal migration, and porous border enforcement has allowed for a large pool of irregular migrants. First, I will present some preliminary evidence about the disproportionate involvement of irregular immigrants in crime, not only compared to natives, but also to legal immigrants. Next, I will use survey data covering both regular and irregular immigrants to show that these differences in criminal behavior may reflect differences in other individual characteristics in addition to the causal effect of legal status. Finally, I will discuss the findings from two natural experiments, which will allow us to isolate the causal effect of legal status from selection on other individual characteristics.

REGULAR AND IRREGULAR IMMIGRANTS IN ITALY

According to the Italian Ministry of Interior, in 2006, irregular immigrants accounted for 80 percent of all immigrants arrested for serious crimes (Italian Ministry of Interior, 2007). This share is certainly higher than the share of irregulars among all immigrants re-

siding in Italy. Although it is hard to precisely count irregular migrants, their share in terms of the total number of foreigners in 2006 was estimated to be below 20 percent (see, e.g., ISMU 2015). Indeed, the same report by the Italian Ministry of Interior notes that legal immigrants are prosecuted at the same rate as natives, whereas irregular immigrants are prosecuted at a much higher rate.

However, one cannot immediately attribute these differences in criminal behavior to the causal effect of legal status, since regular and irregular immigrants differ along many other lines. I document such differences using data from the ISMU Survey on immigrants in Lombardy. Since 2001, the survey has interviewed between eight and nine thousand immigrants every year, including both regular and irregular migrants. The sampling of irregular immigrants exploits social networks around a number of aggregation centers, such as train stations, shops, and telephone centers (see Blangiardo, 2008, for more details on the ISMU survey).

Table 1 shows the average characteristics of the two groups of migrants when pooling together all respondents interviewed by ISMU between 2001 and 2016. Irregular immigrants are more likely to be male, single, and less educated compared to regular immigrants. All these characteristics are typically associated with a higher involvement in crime, suggesting that irregular immigrants would display higher crime rates even in the absence of any causal effect of legal status.

In order to isolate the causal effect of legal status from the confounding effect of other omitted factors, I discuss the evidence from two policy experiments. Both these experiments generated two groups of immigrants that are similar in all respects except for the fact that one group obtained legal status and the other one did not, allowing us to attribute any difference in criminal behavior between such groups to the causal effect of legal status.

NATURAL EXPERIMENT 1: THE EU ENLARGEMENT

On January 1, 2007, Romania and Bulgaria gained access to the European Union (EU). As a consequence, Romanians and Bulgarians obtained legal residence as well as access to official labor markets and social assistance in all coun-



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Table 1
Characteristics of regular and irregular immigrants, ISMU survey 2001–2016

	Regular	Irregular	Difference
Male	0.532 (0.002)	0.661 (0.004)	- 0.128 (0.005)
Age	35.488 (0.029)	31.497 (0.074)	3.991 (0.082)
Married	0.625 (0.002)	0.326 (0.004)	0.299 (0.005)
Number of children	1.282 (0.004)	0.765 (0.011)	0.517 (0.012)
College degree	0.156 (0.001)	0.114 (0.003)	0.043 (0.003)
High school degree	0.434 (0.002)	0.43 (0.005)	0.004 (0.005)
High school dropout	0.41 (0.002)	0.456 (0.005)	- 0.046 (0.005)
Employed	0.777 (0.001)	0.742 (0.004)	0.035 (0.004)
Working in the official economy	0.69 (0.002)	0.06 (0.002)	0.63 (0.004)
Working in the unofficial economy	0.087 (0.001)	0.682 (0.004)	- 0.595 (0.003)
Income. euros at constant 2010 prices	788.7 (2.3)	564.6 (4.9)	224.2 (6.3)

Notes: This table shows the average characteristics of regular and irregular immigrants in Lombardy as well as the difference between the two groups. Standard errors are reported in parentheses. The source of these data is the ISMU survey, pooling all waves conducted between 2001 and 2016.

Source: ISMU Foundation – Initiatives and Studies on Multi-ethnicity.

tries within the EU—although some countries, such as the United Kingdom, maintained some transitory restrictions. In an article with Giovanni Mastrobuoni, we compare the criminal behavior of Romanians and Bulgarians residing in Italy before and after obtaining legal status, with that of other immigrants from candidate EU member countries that did not obtain legal status (Mastrobuoni and Pinotti 2015).

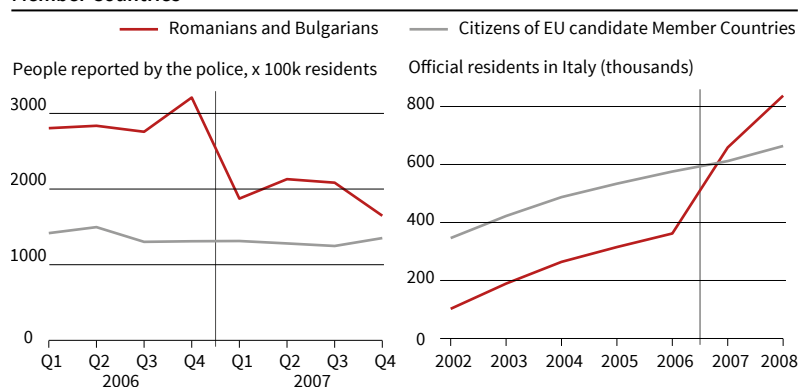
The left graph in Figure 1 shows that the crime rate of Romanians and Bulgarians, as measured by the number of individuals arrested by the police

over the total number of (official) residents, declines abruptly after the EU enlargement, whereas there is no significant change for the other group. While this evidence is consistent with the hypothesis that legal status decreases the propensity to commit crimes, the decline in the arrest rate also reflects the marked increase in the total number of residents in the denominator. The right graph in Figure 1 shows, indeed, that the number of Romanians and Bulgarians residing in Italy doubled after the enlargement. This increase in the number of (official) residents includes both inflows of new immigrants from abroad as well as the legalization of thousands of immigrants that were irregularly present in Italy before the enlargement. On the other hand, the numerator of the crime rate includes both regular and irregular immigrants throughout this period. Therefore, any decline in the crime rate for Romanians and Bulgarians would conflate the inflow of new immigrants as well as the emergence of irregular immigrants in official statistics. Since the effect on the denominator is not present for immigrants from EU candidate member countries, the evidence in Figure 1 is not conclusive on the effect of legal status on the propensity to commit crime. An additional issue when comparing the arrest rate between legalized and non-legalized immigrants is that the probability of being arrested conditional on having committed a crime may vary by legal status. For instance, police and judicial authorities may treat immigrants that are irregularly present in the country more severely.

To address both these issues, we restrict the comparison to a particular sub-population of immigrants in Italy, namely prison inmates pardoned with the Italian Collective Clemency Bill—the “Indulto.” On August 1, 2006, all inmates with less than three years of residual sentence were released from Italian prisons. This amounted to 25 thousand (male) prisoners, including 725 Romanians and Bulgarians, and 1,622 citizens of other candidate EU member countries. Five months later the former group obtained legal status in Italy, whereas the latter group did not. Therefore, we estimate the effect of legal status on the probability of being (re)arrested by comparing the recidivism of these two groups before and after the EU enlargement.

Restricting the analysis to this particular sub-population presents two main advantages for the purpose of identifying the causal effect of legal status. First, all pardoned prison inmates were in Italy before the EU enlargement, and were plausibly irregular between their release from prison and the EU enlargement, alleviating concerns that changes in the denominator of the crime rate will conflate inflows from abroad and legalization of previously irregular immigrants. Second, pardoned individuals committing a new crime within five years of the Indulto were immediately re-incarcerated, regardless of their legal status or other circumstances, in order to serve the pardoned

Figure 1
Arrest Rate and Presence of Immigrants in Italy, New EU Countries vs. EU Candidate Member Countries



Source: Italian Ministry of Interior.

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residual sentence along with a new sentence (see also Drago et al., 2009). This provision greatly attenuates concerns of differential treatment of offenders based on legal status on the part of judicial authorities.

Figure 2 compares the daily hazard rate of recidivism (i.e., the average probability of being re-arrested on any given day conditional on not having been previously re-arrested) between immigrants from new EU and candidate EU member countries, respectively, in the five months before and after the enlargement. The crime rate of Romanians and Bulgarians is identical to that of the other group in the months prior to the EU enlargement, but it decreases markedly after the enlargement. In particular, close to 6 percent of pardoned inmates were re-arrested in both groups before the enlargement; this fraction drops to 2.3 percent for Romanians and Bulgarians after the enlargement, whereas there is no significant decline for the other group. Therefore, the acquisition of legal status cuts the probability of committing crimes by more than half in our sample of former prison inmates. This effect is mainly driven by immigrants in northern Italian regions, which are characterized by better economic opportunities in the official economy compared to southern regions. This finding further corroborates the hypothesis that legal status affects immigrants' criminal behavior through an improvement in alternative income opportunities.

Of course, these results may not be immediately applicable to the rest of the immigrants across Italy. For this reason, in further research on this topic, I exploit another natural experiment affecting a wider population of immigrants in Italy.

NATURAL EXPERIMENT 2: THE CLICK DAYS

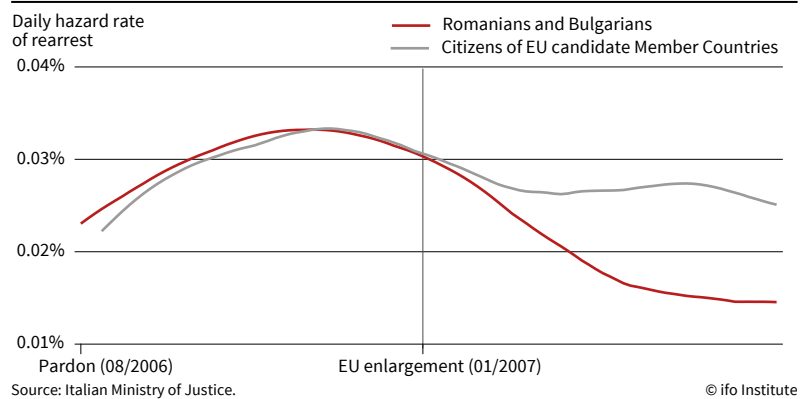
As in many other countries, immigrants' legal work in Italy is regulated by a quota system, establishing the number of work permits available each year by type of work contract, country of origin, and province of destination. At the same time, the Italian system is particular in that, starting in 2006, immigrants must apply for permits through the Internet, starting at 8:00 am, on given "Click Days" throughout the year.¹ Applications are then processed on a first-come, first-serve basis until the quota limit is reached, meaning that a few seconds of delay can determine whether or not an applicant obtains legal status.

In Pinotti (2017), I exploit this allocation mechanism as an ideal Regression Discontinuity Design to identify the effect of legal status on criminal behavior. Specifically, I compare crime rates in the year after Click Days between immigrants who applied just before and just after the permits ran out—about 110,000 applicants on a total of over 600 thousand. Importantly, the great majority of these applicants were already (irregularly) present in Italy at the time

¹ In practice, applications are sent by the perspective employers (i.e., the "sponsors") of immigrant workers.

Figure 2

Recidivism of Pardoned Prison Inmates from New EU Countries and EU Candidate Member Countries



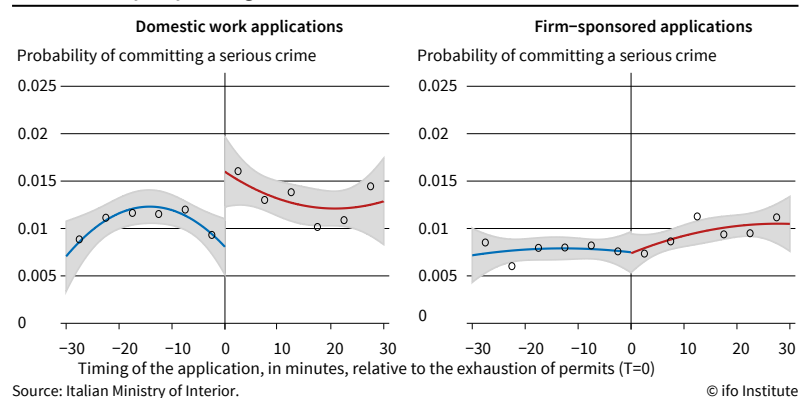
of the application, since Click Days act as de-facto regularizations.

I find that in the year after Click Days, the crime rate decreases by half for immigrants who applied just before the permit cut-off date and had the application accepted, compared to immigrants who applied just after the cutoff and, therefore, had the application rejected. In addition, I uncover an interesting heterogeneity by type of contract. In particular, applicants sponsored by individuals and families for domestic work (e.g., caregivers) exhibit both a higher crime rate and a stronger response to legal status compared to applicants sponsored by firms; see Figure 3.

Additional evidence suggests that (male) applicants for domestic work are, in many cases, unemployed individuals sponsored by friends or relatives for sham contracts aimed only at obtaining a residence permit. By contrast, firms are subject to greater scrutiny, and are thus more likely to only sponsor applicants backed by real job offers. In addition, firm-sponsored workers are often already employed in the host firm before obtaining a formal job contract. Therefore, it is not surprising that they already exhibit a lower crime before Click Day as well as a lower response to legal status acquisition as compared to domestic applicants.

Figure 3

Crime Rate of Applicants for Domestic Work vs. Firm-Sponsored Jobs, before and after Click Days, by Timing of the Application



CONCLUSION AND POLICY IMPLICATIONS

In summary, the evidence from both natural experiments confirms that the acquisition of legal status decreases the propensity to engage in crime. The relative magnitude of the effect is also remarkably similar—an over 50 percent decrease in the probability of committing crimes—in spite of obvious differences in the two populations of interest, former prison inmates and applicants for work permits, respectively. Additional evidence from both experiments highlight the fundamental role of access to formal labor markets as the main mechanism through which legal status influences immigrants' criminal behavior.

These results have far-reaching implications for designing migration policies. In most destination countries, growing concerns about the alleged effect of immigration on crime increase support for anti-immigrant parties and restrictive migration policies. To the extent that these policies complicate the path to legal work and residence for immigrants who are irregularly present in the country, they could backfire and result in a rise in immigrant crime. A similar ar-

gument applies to refugees and asylum seekers, who often face employment bans upon arrival in destination countries. Fasani et al. (2020) show that lifting these bans considerably improves access to legitimate income opportunities in destination countries, which in turn should decrease risks of involvement in crime.

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Swantje Falcke

Naturalization as a Catalyst for Integration: A Heterogeneous Picture

In 2018, 672,270 people were naturalized in the EU-27 countries (Eurostat 2020). If one looks at the naturalization rate, the number of naturalizations per 100 foreign residents, the variation within Europe becomes clear. With 7.2 naturalizations per 100 foreign residents, the naturalization rate was in 2018 highest in Sweden and lowest in Estonia with 0.4 percent. Germany is below the European average with 1.2 naturalizations per 100 foreign residents.

Naturalization is not only relevant to the integration process, but is also the foundation of a democratic society, since citizens can play the most active role in shaping it. This also plays an important role in Germany, where the foreign population in 2019 was 11.2 million, a third of whom (4.2 million) have lived in Germany for more than 15 years (Destatis 2019).

NATURALIZATION AND INTEGRATION

Integration is a broad term. This paper follows the definition of Penninx (2003), which describes integration as a process where immigrants are accepted in a society, both as individuals and as groups. In this sense, integration is a process without a clear end point, which is influenced by immigrants as well as by society and institutions in the destination countries.

Naturalization can have a positive effect on the integration of immigrants, since the acquisition of citizenship is linked to unlimited residence and voting rights, and also because naturalization is a signal that immigrants see their future in the country in which they live (Bloemraad 2017).

Integration can refer to different areas. The most well-researched aspects regarding naturalization are socio-economic integration, especially work and income, and political participation.

In view of the fact that immigrants often experience disadvantages in the labor market, naturalization represents a potential means of mitigating these disadvantages. With the acquisition of citizenship, immigrants gain access to certain jobs in the public sector and the employer's costs (e.g., checking work permits) are reduced. Obtaining citizenship can also have an impact on political participation. Naturalization often provides access to rights that are reserved exclusively for citizens, such as the right to vote in national elections. In addition to voting rights, naturalization can also promote political participation in a broader sense. Citizenship, as the most secure legal status, can also encourage immigrants to become politically active.

When empirically addressing the question of whether naturalization influences integration, there are certain methodological challenges because the relationship is reciprocal: not only can naturalization influence integration, but integration could also have an impact on the likelihood of naturalization. Studies with long-term data or quasi-experimental designs, which have become increasingly common in recent years, can investigate the effect of naturalization on integration.



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NATURALIZATION AS A CONTEXT-DEPENDENT CATALYST

Empirical studies show that such positive effects of naturalization on integration can indeed be observed. However, these effects are not the same for all immigrants.

On the one hand, the timing of naturalization is important. The sooner immigrants receive citizenship after arrival in the destination country, the stronger the effect of naturalization on integration. Studies in the Netherlands and Germany have shown that naturalization has a positive effect on the labor market integration of immigrants, and that this effect is greater if citizenship is obtained relatively quickly after migration (Gathmann and Keller 2017; Peters, Vink and Schmeets 2018). In the Netherlands, immigrants can usually apply for Dutch citizenship after five years. Peters et al. (2018) show that in the Netherlands, the likelihood of employment for immigrants increases by 24 percent for men and 36 percent for women if they acquire Dutch citizenship after five years. If immigrants acquire citizenship after more than eight years, the positive effect decreases to 10 percent. Studies in Switzerland have found similar results with regard to social integration (Hainmueller et al. 2017).

On the other hand, the impact naturalization has on integration depends on where one comes from. Immigrant groups that have the highest incentive to acquire citizenship of the destination country because of the situation in their country of origin or destination, also experience a stronger positive effect of naturalization on integration. Peters et al. (2020), who examined the effects of naturalization on the income of immigrants in the Netherlands, show that naturalization has a strong positive effect, especially

for immigrants from less-developed countries. The positive effect of naturalization on socio-economic integration may also be stronger for immigrants from countries of origin, who are more likely to experience discrimination (Helgertz, Bevelander and Tegunimataka 2014; Hainmueller et al. 2017, Hainmueller et al. 2019). Hainmueller et al. (2019) show that acquiring Swiss citizenship increases the annual income of marginalized immigrant groups by USD 5,000. Helgertz et al. (2014), who have examined the effect of naturalization on economic integration in Denmark and Sweden, find that in both countries there is a positive effect of naturalization on the economic integration of immigrants from Asia and Africa, whereas this effect cannot be observed for other immigrant groups. The fact that the same effect can be observed in Denmark and Sweden, two countries with quite different naturalization laws, leads the researchers to conclude that restrictive naturalization laws do not promote the economic integration of immigrants.

A PASSPORT IS NOT A PANACEA—BUT IT CAN MAKE A BIG DIFFERENCE

Political debates on naturalization and integration are often based on political beliefs rather than facts. The question whether naturalization is seen as a reward for successful integration or as part of the integration process is then often the result of those political beliefs. Given the naturalization requirements in all European countries, obtaining a passport always requires a certain amount of preparation and investment. Naturalization is a catalyst if it has a positive impact on the integration process. Naturalization is seen as a reward for successful integration by those who fear that obtaining citizenship of a country demotivates immigrants to integrate further in the destination country. Following this line of argumentation,

one would expect no, or even a negative, effect of naturalization on integration.

While the empirical results on the impact of naturalization on integration show a mixed picture, one thing is clear: for certain immigrant groups, naturalization is a catalyst for integration. Furthermore, stricter naturalization requirements are associated with both lower naturalization rates and later naturalizations. In short, the passport is not a panacea—but it can make a big difference.

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Irene Monasterolo

Embedding Finance in the Macroeconomics of Climate Change: Research Challenges and Opportunities Ahead

The importance of “making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development” (Art 2 (1)(c)) has been highlighted by the Paris Agreement (PA) signed by most UN countries in 2015 (UNFCCC 2015). The potentially enabling role of finance in supporting the low-carbon transition has also been recognized by the European Action Plan on Sustainable Finance and by the European Green Deal.¹

However, more recently, financial supervisors have been focusing on the financial risks associated with climate change and with a disorderly transition to a low-carbon economy. In 2015, the former Governor of the Bank of England, Mark Carney, warned the financial industry about the impact of climate change on the economy and finance (Carney 2015). Carney highlighted that the temporal mismatch between climate impacts (mid to long term) and the short-termism of time horizons in financial decision making, could lead investors to overlook the economic and financial risks of climate change.

Since then, more than 70 central banks, financial regulators and development finance institutions have joined the Network for Greening the Financial System (NGFS) to mainstream climate financial risk assessment and climate stress testing in financial portfolios (NGFS 2019). The NGFS concerns about climate-related financial risks are aligned with a stream of research in climate finance that has developed around the seminal work of the climate stress test (Battiston et al. 2017).

The contribution of financial supervisors, practitioners, and policy-relevant research has been pivotal in advancing the analysis of climate-related financial risks and opportunities. In this regard, understanding under which conditions climate policy and finance could be a driver or a barrier to the low-carbon transition requires one to (i) analyze the risk transmission channels from climate change (either physical and transition risks) within the economy and in the finance sector, (ii) price forward-looking climate risks in investor portfolios and (iii) introduce climate change con-

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en.

ABSTRACT

The role of finance in the low-carbon transition, as well as the deep uncertainty and endogeneity of climate finance risk, are currently neglected by climate economic models. This leads to a false sense of control in terms of risks and opportunities associated with the low-carbon transition. Further, it prevents people from understanding under which conditions climate policies and finance could be a driver or a barrier. Recent research has started to shed light on how climate economic and financial risk modeling could embrace this complexity.

siderations in risk management strategies including through climate stress testing.

Addressing these issues requires models able to consider the nature of climate change risks for finance, i.e. its deep uncertainty, non-linearity and endogeneity. Climate economic models have so far downplayed the complexity of risk across possible climate change scenarios by limiting the impact of uncertainty to averaged shocks on economic output. Further, by focusing on identifying optimal policies (e.g., carbon pricing) and the social cost of carbon, such models neglected the role of agents' adaptive expectations in the realization of climate risk. Importantly, they have overlooked the role of finance and its complexity in amplifying risks.

These are major limitations that could lead to misunderstand the channels through which finance interacts with investment and policy decisions in the low-carbon transition, and thus to underestimate risks and opportunities of climate action.

Overcoming these limitations is crucial for the implementation of effective climate policies and regulations, when investors fail to fully anticipate the impact of the policy introduction, thus affecting volatility of asset prices. In this paper, we address three main questions that are rel-



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evant to advance research in climate economics and finance:

1. What is the nature of climate risks relevant for investment decisions?
2. How well can the models used so far embed such risks?
3. What are the knowledge gaps and what can we do to fill them?

In particular, we discuss why climate risks challenge traditional approaches in climate economics, focusing on the role of time horizons, incentives and externalities. Next, we discuss the solutions offered by recent macroeconomic and financial risk research rooted in evolutionary economics and complex networks (Monasterolo et al. 2019).

The article is organized as follows. Section 2 discusses the conditions for finance to function as a driver or a barrier to the low-carbon transition. Section 3 explores the nature of climate change risks for the economy and finance, while section 4 elaborates on the challenges for climate economics models to address them. Section 5 presents advancements in climate finance research and section 6 discusses climate stress tests for internalizing climate financial risks in decision making. Section 7 concludes.

THE ROLE OF FINANCE IN THE LOW-CARBON TRANSITION: DRIVER OR BARRIER?

Analyzing under which condition finance could be a driver or a barrier for climate mitigation and adaptation represents a crucial research challenge. Latest IPCC reports (2014, 2018) highlighted the **enabling role that finance could play** in achieving the climate targets by mobilizing capital for low-carbon investments. New financial instruments, including Environmental Social Governance (ESG) products and green bonds, are increasingly considered a tool for scaling up sustainable finance. For instance, in the first quarter of 2020, i.e. when the COVID-19 crisis started, ESG-related funds outperformed the markets.²

Nevertheless, climate finance is not increasing at the pace and amount needed to align economies with the PA and with the Sustainable Development Goals (SDGs). Challenges include the uncertainties that characterize climate change and climate policy impacts; the lack of a standardized, operative taxonomy of sustainable investments (Monasterolo and Volz 2020); the low degree of transparency of sustainable financial instruments (Karpf and Mandel 2018, Berg et al. 2019, Busch et al. 2020); the lack of mainstreaming of consolidated tools for climate financial risk assessment (Battiston and Monasterolo 2020).

Another related reason can be found in the consequences of a “disorderly” low-carbon transition for

the economy and finance, i.e., when investors fail to fully anticipate the impact of the policy introduction on their business, thus affecting the volatility of asset prices (Monasterolo and Battiston 2020). Firms whose business either depends on fossil fuel production and utilization for revenues, or that are located in areas exposed to climate-related hazards, will be affected by losses, experiencing carbon-stranded assets (Leaton et al. 2012). These losses could negatively affect the value of the firms’ financial contracts and securities, and cascade to financial portfolios invested in those firms (Stolbova et al. 2018). The high degree of interconnectedness of financial actors can further amplify losses for individual financial actors and for the financial sector, as occurred in the last financial crisis (Battiston et al. 2016a).

In this context, **finance could turn out to be a barrier to the low-carbon transition**. By not revising its investment decisions (i.e., assigning higher risk to high-carbon firms and a lower risk for low-carbon investments) and not adapting its investment strategies to the new climate and climate policy context, the financial sector could introduce new risks for economic and financial stability. Indeed, central bankers have developed the notions of the climate “Minsky Moment,” i.e., a sudden drop in carbon assets prices and of “Green Swan,” i.e., global financial distress triggered by climate change (Bolton et al. 2020).

Research has shown that central banks have good reason to worry because investors and countries are highly exposed to economic activities that can become stranded assets (Dietz et al. 2016, Battiston et al. 2017, Volz et al. 2020, Battiston and Monasterolo 2019).

THE NATURE OF CLIMATE CHANGE RISK IN THE ECONOMY AND FINANCE

Understanding the characteristics of climate change risk is crucial for assessing its impacts in the economy and finance, to identify the most suited policies to address them, and the conditions for implementing them. These characteristics include (see Monasterolo 2020 for a review):

- **Deep uncertainty.** Forecasts of climate change and its impact on humans and ecosystems contain irreducible uncertainties because of the nature of the earth system, including the presence of tail events (Weitzman 2009) and tipping points that could lead to the possibility of crossing the planetary boundaries (Steffen et al. 2018) and of triggering domino effects (Lenton et al. 2019).
- **Non-linearity.** Recent analyses show that the distribution of extreme climate-related events (heat/cold waves) is highly non-linear (Ackerman 2017). Fourteen of the fifteen hottest years on record have occurred since 2000, while 2015–2019 were the five hottest years on record

² <https://www.morningstar.com/articles/976361/sustainable-funds-weather-the-first-quarter-better-than-conventional-funds>

(WMO 2019³). If this trend continues, historical data could be a poor predictor of future events and their magnitude, and thus of future losses induced by climate change.

- **Forward-looking nature of risk.** The impacts of climate change and climate mitigation actions (e.g., net zero transition) are on the time scale of two decades or longer, whereas the time horizon of investors and financial markets, and policy makers, is much shorter (a few months, and three to five years, respectively).
- **Endogeneity of risk.** Climate financial risks are endogenous, depending on the perceptions of future climate risks of policy makers and investors. These affect their expectations and policy/investment decisions, and thus have an impact on the realization of climate risks themselves (Battiston 2019).

Hot Spots for Research Challenges in Climate Finance

Traditional climate economic models based on optimal policy have brought the attention to climate policy design and to the narrative of carbon-stranded assets. However, in the analysis of climate finance, these approaches face several challenges and limitations:

- **Treatment of climate shocks.** Climate shocks are usually considered as exogenous, and their averaged impacts assessed on aggregate GDP. Importantly, the intertemporal impact of climate shocks depends on assumptions made regarding future discounting, in a cost-benefit framework (see e.g., Nordhaus 1993, 2017). In reality, climate change is being endogenously generated by the production and consumption decisions of economic agents, by the decisions of governments to introduce (or delay) climate policies, as well as by the investment decisions of financial actors. Further, given the non-linearity of climate change and its impacts, extreme shocks scenarios should be considered to avoid underestimating risks.
- **Deep uncertainty over climate impacts and climate policy** leads agents to make decisions under conditions involving imperfect information about the future. It also implies potential mispricing of climate risks (and opportunities) in financial contracts (see e.g., Ramelli et al. 2018, Morana and Sbrana 2019, Monasterolo and de Angelis 2020), meaning that agents can be subject to information asymmetries (e.g., on risks and returns of different investments, or on the exposure of investors to climate risks). In this context, assumptions regarding perfect foresight on the part of agents involving the future and the actions of all other market participants, of market clearing prices,

and of perfect substitutability of production factors (that allow a fast return to equilibrium) do not allow these dynamics to be captured.

- **Endogeneity of risk.** Perceptions of future climate risks held by today's policy makers and investors could lead to multiple possible pathways (or equilibria, in the sense of strategic interaction of economic agents) that are very different based on the future prevalence of dominant climate policies and energy technology shocks (Battiston 2019), or forward-looking investors' expectations (i.e., their "climate sentiments", Dunz et al. 2020a). If governments delay policy introduction, climate risks could affect countries and investor financial stability in the near future. But if governments introduce early climate policies and financial actors do not trust them, they will not revise their investment strategies and the low-carbon economy will not develop. This, in turn, would make it costlier for policy makers to further implement climate policies, and could eventually lead to a policy impasse.
- **Risk transmission channels and drivers of risk.** In today's interconnected economies, climate change and policy impacts can be transmitted to economic and financial agents via chains of investment exposures, influencing their reactions. This, in turn, can give rise to endogenously generated macroeconomic dynamics. Identifying climate risks transmission channels and the reinforcing feedback is crucial in assessing the overall magnitude of impacts and their distributive effects (Dunz et al. 2020b). However, most climate economic models consider uncertainty of climate impacts only as an aggregate shock on GDP growth. In addition, model behaviors are constrained by assumptions on market clear pricing, presence of representative agents with perfect foresight, and perfect substitutions of production factors, and by the lack of the role of finance and complexity. These assumptions critically constrain and limit the understanding of risk-transmissions channels and distributive impacts.
- **The role of finance and its complexity.** Finance plays a main role in the economy and is recognized as a powerful driver of risk amplification via portfolio interconnectedness (Battiston et al. 2012, Billio et al. 2012, Adrian and Brunnermeier 2016, Battiston et al. 2016b). Climate economic models either do not include a financial sector or only consider a stylized financial actor that acts as a conduit of savings for investments, subject to economic efficiency criteria in asset pricing. This is at odds with the functioning of the financial sector, where access to finance is costly and often not available, in particular in times of crisis, or for new sectors that do not have a clear track record (e.g., some low-carbon investments). Neglecting finance and its complexity could lead to a false sense of control over policy decisions and their

³ <https://public.wmo.int/en/media/news/july-matched-and-may-be-broke-record-hottest-month-analysis-began>.

- impacts and to underestimating the risks (and opportunities) from the low-carbon transition.
- **Beyond monetary value to assess externalities.** Climate economic models carry out the valuation of costs and benefits of climate policy action (or inaction) solely in monetary terms. Nevertheless, several elements that are crucial for mitigating and adapting to climate change, e.g., biodiversity and oceans, do not have a monetary value. Thus, the negative externalities associated with the impact of human activities, including finance and policy, on these dimensions, and their impact on the well-being of current and future generations, do not enter calculations in cost-benefit analyses. This leads one to underestimate the costs of climate inaction and to overestimate the costs of policy action in the short term.
- **Time horizon and incentives.** The time horizon of climate change and its largest impacts are expected to occur in the longer term (2050–2100 and beyond). This is also the time dimension considered in most climate economic models. However, policy makers and investors' decisions are taken on a much shorter time horizon (usually an electoral term and a semester, respectively). This mismatch between time horizons creates negative incentives for policy makers and investors to act early on the climate.
- **Beyond optimal policy: second best solutions.** Deep uncertainty, non-linearity and endogeneity of risk represent the primary obstacles to implementing optimal climate policies and could result in a general inability to come up with optimal carbon pricing. It has been highlighted that introducing a first-best solution in optimal policy context (e.g., a carbon tax) is complex in actual practice, and that it may not suffice alone (Stiglitz 2019). In this context, central banks and financial regulators (e.g. those of the NGFS) are now considering the introduction of climate risk considerations in their monetary and macroprudential policies.

ADVANCES IN MACROECONOMIC AND FINANCIAL ASSESSMENT OF CLIMATE CHANGE

Assessing the impact of climate policies and investment decisions in the low-carbon transition require standardized and actionable definitions of sustainable economic activities and of carbon-stranded assets, both of which are lacking to date.

Standardized classification of sustainable activities

The lack of a common and consolidated definition of green finance makes it challenging to identify and track green financing initiatives, instruments, and eventually projects and sectors. In addition, it introduces an additional source of uncertainty (i) for investors, who want to assess and manage climate risks and opportunities in their portfolios, (ii) for financial

supervisors with a financial stability mandate that have to assess the drivers of individual and systemic climate-related financial risks, and (iii) for policy makers, in the analysis of the winners and losers of the policies for the low-carbon transition.

To fill this gap, the European Commission (EC) has introduced the EU taxonomy of sustainable investments (the 'Taxonomy'). The final regulation approved in June 2020 (PE/20/2020/INIT) refers to 'sustainable economic activities' based on the contribution to at least one of six environmental goals, including climate mitigation and adaptation. Furthermore, investments in such activities should do no harm with regard to the six environmental goals. Every activity (defined according to the NACE sector level, thus excluding certain firms) that passes the threshold can be considered sustainable according to the taxonomy criteria. Thus, in order to be taxonomy eligible, economic activities need to be not only in the list of eligible NACE codes, but also to pass activity-specific thresholds and Do-No-Significant-Harm (DNSH) criteria.

While the EU Taxonomy builds on the NACE code classification (NACE Rev2), in several cases a more granular classification by energy technology is required in order to identify economic activities that can be considered sustainable. Indeed, several firms have business lines characterized both by high and low-carbon technologies (e.g. ENEL, ENI). In addition, the EU Taxonomy does not provide a proxy of climate risk for the financial investments. Finally, it does not directly provide a standardized classification of sectors or economic activities that can be exposed to carbon-stranded assets. These challenges may contribute to delay implementation of the EU Taxonomy in the financial market.

The limits of carbon-stranded assets

The concept of carbon-stranded assets has provided a powerful metaphor to conceptualize the risks that climate change and a disorderly low-carbon transition could represent for the economy and finance. Van der Ploeg and Rezai (2020) identified four sources of carbon-stranded assets, i.e., abandoned carbon, abandoned capital, anticipated stranded asset, and realized-stranded asset. Cahen-Fourot et al. (2019) studied the most carbon-exposed sectors along the value chain using input-output matrices and analyzed the share of capital stock at risk of being stranded by country, especially in the electricity and industrial sectors.

However, when it comes to assessing climate-related financial risks, three challenges emerge with the current analyzes of carbon-stranded assets. First, the lack of a standardized definition means that the application and results of models are not comparable. Then, a convergence in the definitions of carbon-stranded assets is needed also with regard to identifying the economic activities at a level of disaggregation that is relevant for financial and policy analysis (e.g., NACE 4-digit level). Third, the narrative of stranded assets alone shadows the opportu-

nities for returns for investors who embrace a smooth low-carbon transition and thus the role of co-benefits of climate policies.

Toward a standardized assessment of economic activities' exposure to climate risks

To address these limitations and provide a standardized and actionable classification of economic activities that are exposed to climate transition risk, Battiston et al. (2017) developed the Climate Policy Relevant Sectors (CPRS) classification. This framework considers economic activities that could be affected positively or negatively (becoming stranded assets) in a disorderly low-carbon transition. CPRS are identified by considering (i) their direct and indirect contribution to GHG emissions; (ii) their relevance for climate policy implementation (i.e., their costs sensitivity to climate policy change, e.g., the EU carbon leakage directive 2003/87/EC); (iii) their role in the energy value chain.

Starting with the NACE classification (4 digit), these criteria yield six sectors (fossil fuel, utility, energy-intensive, housing, transportation, agriculture) that can be further disaggregated considering different technologies that are relevant for the energy transition (e.g., fossil fuel/coal, fossil fuel/oil, fossil fuel/gas). For example, some activities that pertain to the value chain of the transportation sector are classified in terms of NACE codes under C-Manufacturing. Regrouping them by CPRS allows their energy technology to be considered and to analyze the contribution and relevance of the investment more directly in relation to climate mitigation or adaptation. As such, CPRS overcomes the limits of classification of exposures based on GHG emissions; it adds information on the climate risk exposure to the NACE 4-digit sector classification, which by itself does not provide any proxy of climate risk; it provides information on the energy technology mix of the economic activity and its relevance for climate policy implementation.

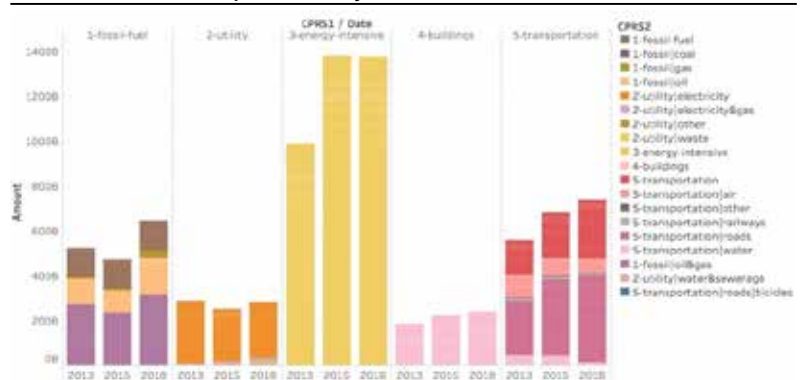
The CPRS classification is used by several financial institutions, including the European Central Bank (ECB 2019), the European Insurance and Occupational Pension Authority (EIOPA, Battiston et al. 2019), the Austrian National Bank and Banca d'Italia. The European Commission's Joint Research Center (Alessi et al. 2019) used the CPRS to analyze the climate transition risk exposure of the EU Taxonomy financial coverage (total financial value of equities and bonds), at the level of the NACE codes (4-digit). It used the CPRS classification in its aggregate (CPRS1) and disaggregate (CPRS2) form (Figure 1) over time.

INTERNALIZATION OF CLIMATE FINANCIAL RISKS AND OPPORTUNITIES IN DECISION MAKING

Recently, climate stress-tests have been developed to assess the financial risk implications of climate change and climate transition scenarios in investors' portfolios. In 2017, Battiston et al. developed the first

Figure 1

Breakdown of Market Capitalization by CPRS over Time



climate stress test that embeds forward-looking climate transition scenarios in financial risk assessment of individual portfolios and of the financial system. The climate stress test methodology is based on four modules (Figure 2):

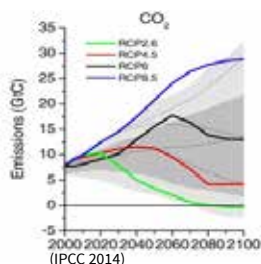
- 1. Forward-looking climate shocks** on outputs of low-carbon and high-carbon economic activities conditioned to climate scenarios are calculated based on trajectories of energy technologies provided by the Integrated Assessment Models (IAM, Kriegler et al. 2013, McCollum et al. 2018) conditioned to climate policy introduction, through time. From these trajectories, we calculate shocks on the market shares of sectors (NACE 4 digit), based on their energy technology (fossil fuel, renewable). The shock affects the economic activities' output and contribution to the Gross Value Added (GVA) and can be intended as a jump from one equilibrium state of the economy (i.e., the Business as Usual) to another equilibrium state of the economy characterized by the climate policy shock.
- 2. Climate financial risk pricing of assets** carries out a valuation adjustment and a risk adjustment of individual financial contracts and securities (e.g., loans, bonds, equity), i.e. in their Probability of Default (PD) conditioned to the shock scenarios of 1.
- 3. Climate financial risk assessment** calculates the adjustment on key financial risk analytics at the level of investor portfolios, i.e., the Climate Value at Risk (Climate VaR), Expected Shortfall, and Climate Spread (for bonds), conditional to the climate shock scenarios.
- 4. The Climate stress test** assesses the largest losses for individual portfolios conditioned to the climate scenarios, considering risk amplification and reverberation driven by financial interconnectedness, and the implications on systemic financial risks.

The climate stress test development and application to investor portfolios has highlighted the following

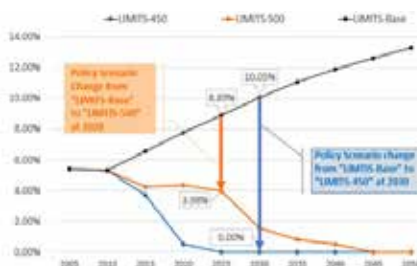
Figure 2

The Four Modules of the CLIMAFIN Tool for Climate Financial Risk Assessment in Investment Decisions

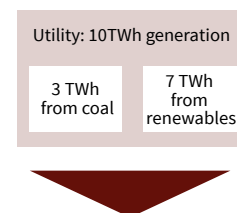
M1: Climate Scenarios (Emission Targets)



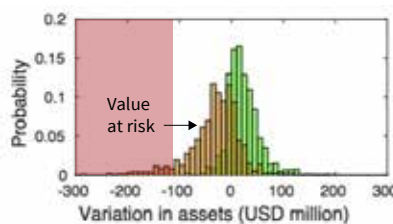
M2: Shocks on sectors' forward-looking trajectories (market shares, GVA)



M3: Shock on firm's cash flows and fiscal revenues



M4: Climate var and climate stress test conditioned to climate scenarios



M3: Shocks on price of financial contracts

Country	Witch: bond shock (%)	Witch: yield shock (%)
Austria	1.3	-0.16
Australia	-17.36	2.45
Canada	-5.21	0.67
Norway	-14.82	2.05
Poland	-12.85	1.75

Source: Monasterolo and Battiston 2020.

challenges: (i) the choice and use of climate scenarios, (ii) the macroeconomic assessment of the risk transmission channels.

Choice and use of climate scenarios for climate stress testing

The scenarios and trajectories of energy technologies composition of sectors are provided by climate economic models. The IPCC uses trajectories and scenarios provided by the last generation of IAMs that offer a granular representation of the energy technology mix of aggregate sectors that would allow us to achieve the 1.5 degrees C or 2 degrees C world that comprise the economy. One main challenge in assessing the attainability of the climate trajectories is the fact that climate mitigation scenarios do not account for the role of finance and its complexity in achieving the same scenarios (Battiston et al. 2020). Climate-aligned investments are assumed to be available without frictions (no credit constraints) and the trajectories do not reflect the impact of mitigation scenarios on investment decisions of financial institutions. A set of these scenarios is recommended by the NGFS for climate stress testing exercises. In particular, the NGFS has identified a single transition scenario that it considers disorderly, based on a late introduction of climate policies (NGFS 2020). This definition and selection of disorderly transition scenario could lead one to largely underestimate the PD of individual investors and induce investor moral hazard (Battiston and Monasterolo, 2019). In contrast, climate scenarios used in climate stress testing should be broad enough to consider the associated uncertainty (e.g., the type, timing and magnitude of climate policy and its impact). In addition, the term disorderly should include not only the timing of policy but, most

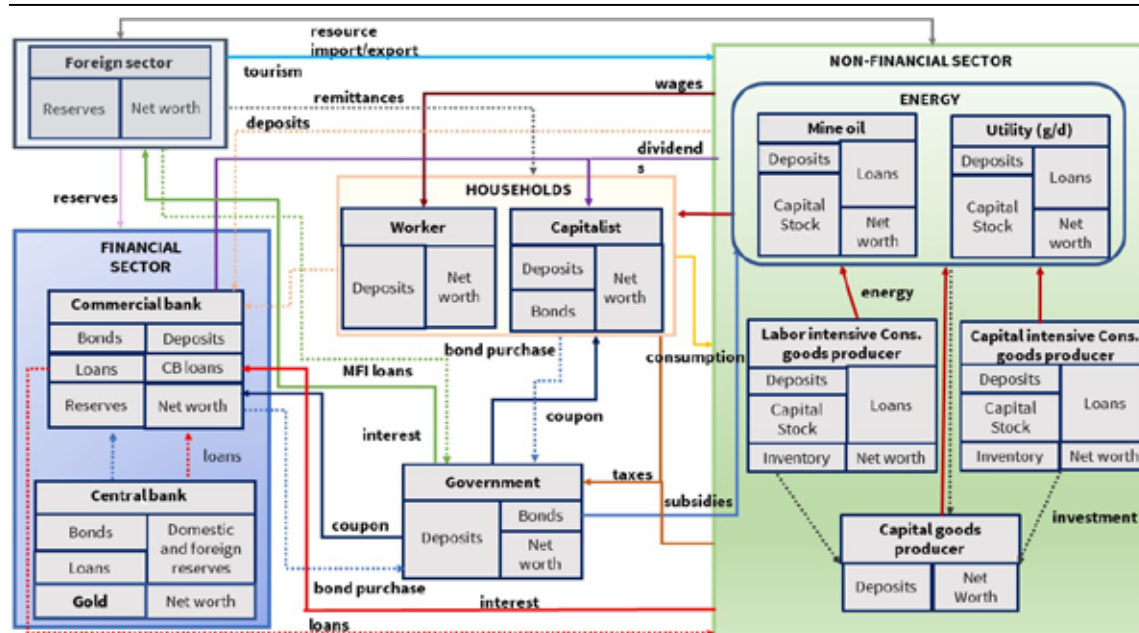
important, the lack of investors' anticipation of the policy impact.

Risk transmission channels from the economy to finance Assessing the risk transmission channels from climate change and policy to the economy and finance is crucial for climate stress testing. In this regard, macroeconomic models should:

- Be flexible enough to consider different and even extreme climate scenarios (probability of occurrence and magnitude of shocks) and the time delay of impacts on investors' and policy makers' decisions;
- Represent heterogeneity in agent preferences, allow agents to depart from perfect foresight and endow them with adaptive expectations in order to allow them to consider the impact of radical uncertainty in decision making;
- Be able to assess the drivers of reinforcing feedback loops and out-of-equilibrium dynamics in the economy, conditioned to climate change and climate policy scenarios. In this regard, it is crucial that shocks transmissions are traceable, and the causal relations statistically assessed to allow transparency of outcomes and increase the policy relevance of results
- Allow a realistic representation of the economic and financial investment, and government and central bank policy decisions in the low-carbon transition, thus departing from a world of first-best solutions.

Recent macroeconomic models based on Stock-Flow Consistency and complexity science contributed to

Figure 3
EIRIN Model Framework



Note: The figure represents the main agents and sectors of the EIRIN economy, and main capital and current account flows. Source: Dunz et al. 2020b.

analyze the climate risk transmission in the economy and finance (see e.g. Bovari et al. 2018, Monasterolo and Raberto 2018, 2019; Dafermos et al. 2017; Naqvi and Stockhammer 2018; Yilmaz and Godin 2020). As a main feature, these models can assess shock transmission channels among agents and sectors, and the drivers of reinforcing feedback loops that give rise to non-linearity.

Heterogeneous sectors and agents are represented by their balance sheets entries that are connected in a network of relations (see Figure 3). Similarly to Agent Based Models (Dosi et al. 2010, Caiani et al. 2016, Lamperti et al. 2019), agents are endowed with adaptive expectations about the future and their decisions can depart from perfect foresight and optimization in contexts of deep uncertainty. These features allow the interplay between shock transmission and agent response to be represented as endogenously generated effects on macroeconomic variables, and government and central bank policy responses.

CONCLUSION

In this paper, we provide an overview of the challenges and opportunities for introducing finance and its complexity in the macroeconomic assessment of climate change and of the low-carbon transition.

We presented the characteristics of climate change risks, i.e., deep uncertainty, non-linearity and endogeneity, and the challenges for embedding them in climate economic models. In particular, we analyzed the implications of selection of mild climate scenarios, the treatment of uncertainty on economic impacts and investment decisions, the use of optimal policy approach and the neglecting the complexity

of finance on the climate policy relevance of models' results.

We discussed the limits of taxonomies of investments and of the current conceptualization of carbon-stranded assets for assessing the exposure to climate risk of investor portfolios, going beyond the GHG emissions accounting and carbon budget. Finally, we presented recent approaches in macroeconomic and financial risk modeling that are contributing to address these challenges (e.g. climate stress testing), and that are now applied by central banks, financial regulators and development finance institutions.

Addressing the methodological challenges analysed here can open new avenues of research in climate finance and provide more policy-relevant and actionable results. This, in turn, requires the climate economics community to engage in interdisciplinary research, and to explore the added value of complementary modeling approaches in climate finance. Filling these research gaps is crucial for supporting policy makers and financial institutions in implementing credible, sustainable and effective climate policies, and avoiding trade-offs in financial stability and inequality.

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Truc Nguyen, Lukas Mergele and Larissa Zierow

Sweden's School Reforms to Postpone First Number Grades to Middle School: A Model?

Providing performance feedback to students plays a key role in the educational production process. A variety of formal feedback types has been used in different education systems, including numerical grades, alphabetical grades, descriptive marks (e.g., excellent, good, unsatisfactory), and narrative reports. Grade-based feedback forms, such as numerical and alphabetical grades, serve two main purposes. First, grades provide performance information to students, such that they become aware of their learning outcomes and can adjust their learning efforts accordingly, if necessary. Second, report card grades also inform parents about a child's performance and may signal the need for parental involvement. Report card grades provide information about student ability, which in turn improves the efficiency of tracking decisions and enables students to receive additional support if needed.

More recent political discussions have highlighted the potential negative impact of early grading on student motivation. Being graded may reduce a student's interest in learning if a student starts to consider learning merely as a task to get the reward. Consequently, students may tend to choose the easiest tasks and lose interest in more challenging tasks (Kohn, 1999). In addition, grading may increase inequalities due to potentially heterogeneous parent reactions to grades.

Consequently, several countries with well-established educational systems have postponed the timing of the first numerical grade assignment in recent decades. In particular, Sweden has postponed grades in report cards from school year 3 to year 8

ABSTRACT

In the educational production process of the school system, report cards provide a crucial performance feedback for students. Sweden was a pioneer in abolishing numerical grades from report cards in elementary school, as grades were considered harmful for students' motivation to learn. In this article, we outline the Swedish reforms and summarize the existing evidence on the consequences of early grading. Overall, this evidence points towards mixed effects on student achievement and educational inequalities.

in two steps. The country therefore provides both a reform model and a rare testing case to inquire into the effects of early grading on student outcomes. This article outlines the Swedish reforms and summarizes the existing empirical evidence regarding the consequences of early grading.

THE SWEDISH GRADING REFORMS

Swedish school grades are recorded in report cards on a scale from 1-5 (5 is the highest) to summarize student achievement at the end of the semester and to serve as a basis for tracking decisions. The grading system was subject to several major reforms summarized in Table 1. Until 1969, Swedish students were awarded grades at the end of the third (end of lower school) and sixth grade (end of elementary school).



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Table 1

School Grade Reforms in Sweden

Year	Before 1969	1969 – 1981	After 1981
School year to receive first grades	End of third school year	Depending on municipality: Either end of third year or end of grade six or not graded at all until grade eight	No school grading before grade eight in all municipalities

Source: Own compilation of the authors.

Between 1969 and 1981, a curriculum reform enabled Swedish municipal school boards to flexibly abolish grades for these two years. Even though administrative records of the implementation are not available, survey data from Sjögren (2010) shows that most municipalities decided to not abolish grading for both grades simultaneously. The preferred option was to abolish grading in third grade but to retain numerical grades in sixth grade. After ten years, around 76 percent of the municipalities removed grades at the end of third grade, whereas only 44 percent of them chose to not grade students at sixth grade. In addition to allowing municipal school boards to abolish early grades, the 1969 curriculum reform introduced in all municipalities non-compulsory biannual parent-teacher conferences.

The introduction of the “1980 National Compulsory School Curriculum” abolished all student grading before the eighth grade. Given the differences in school grading between municipalities arising between 1969 and 1980, the enactment of the 1980 curriculum triggered two changes. First, numerical grading was postponed for all schools through eighth grade. Second, grading was replaced by qualitative, oral communication between teacher and parents twice a year. The context of the Swedish reform provided the basis for the very first empirical studies on the impacts of early grading, as will be further discussed below.

EVALUATIONS OF THE SWEDISH SCHOOL GRADING REFORMS

Based on a literature search, we identify five papers evaluating the Swedish grading reforms. A summary of the data and research design is shown in Table 2.

Sjögren (2010) provides the first study exploring the Swedish grading reform to study the long-term effects of early grading on educational attainment and adult earnings. The author finds that early grading, on average, increases girls’ years of schooling irrespective of their family background. Moreover, sons and daughters of low-educated parents become more likely to graduate from high school if they received grades early. Conversely, boys with highly educated parents who had earned bachelor and post-grad degrees and were high earners performed better when they were not graded. Overall, the author uncovers positive effects of early grading for students with low academic ability and a lower-middle class or poor socio-economic background.

Klapp et al. (2014) focus on the effects of grades in terms of achievement by 13-year-old (in grade 7) Swedish students. The study finds no overall effects of early grading on subsequent achievement, which is measured through grades in 11 continuous subjects and three new subjects in seventh grade¹. However, grading was observed to have negative effects on subsequent school achievement for low-ability students. In a further study, Klapp (2015) evaluates the effects of early grading on student achievement in secondary school (grades 7, 8, 9) and upper secondary school (grade 12). The results confirm the previous findings that early grade assignments reduce subsequent school achievement, especially for low-ability students. However, early-graded girls are more successful compared to ungraded girls in terms of school achievement and upper secondary school completion rates. To explain these findings, Klapp (2017) questions whether academic and social self-concept and motivation explain the effect of early grading on student achievement. Such factors were collected from the spring 1979/1980 survey for students in grade 6. Some questions were hypothetically raised to reflect academic self-concepts in mathematics and Swedish such as, “Do you think you are good at spelling?” or, “Do you think you are good at counting?” Self-confidence in social contexts and social responsibility were hypothetically defined through indicators such as, “If you had to take the lesson when teacher was ill, how well would you cope with that?” and, “If you had to arrange a party for your class, how good at it do you think you would be?” The levels of motive to improve in academic results were reflected through indicators such as, “Do you want to do better in school?” and, “Do you often think that you would like to be better at math?” Klapp (2017) confirms that the negative effect of grading for low-ability students on their subsequent subject grades are fully mediated by academic self-concept and motivation to improve at school. He explains that grades provide new information about one’s relative academic ability in comparison to peers. Students who receive grades higher than their self-perceived competence tend to experience a gain in academic self-concept. Therefore, they may consider grades as a reward. In contrast, when students receive grades that are lower than they expected, grades then function as an academic loss. Low-ability students may tend to experience more failure and lose a larger number of resources that help them cope with academic stress. Lower-ability students tend to lose these resources, hurting their ability to cope with academic stress, which ushers in a vicious cycle of lower achievement later.

Facchinello (2019) investigates the effects of early grading on Swedish student outcomes over the short- and long-term. The author finds no general statisti-

¹ Of those 11 subjects were taught and graded both in grade 6 and 7, the other three subjects were new to students in grade 7, i.e., biology, chemistry and physics.

Table 2

Summary of Data and Design of Studies on the Swedish School Grading Reform

Study	Sjögren (2010)	Klapp et al. (2014)	Klapp (2015)	Klapp et al. (2017)	Facchinello (2019)
Data	Survey data on school grading reform implementation in 187 municipalities. Swedish register data on individual long-term educational outcomes	Evaluation Through Follow-up (ETF) dataset, containing register and questionnaire data on a nationally representative sample of Swedish compulsory school students.	Evaluation Through Follow-up (ETF) dataset, containing register and questionnaire data on a nationally representative sample of Swedish compulsory school students.	Evaluation Through Follow-up (ETF) dataset, containing register and questionnaire data on a nationally representative sample of Swedish compulsory school students.	The longitudinal Evaluation Through Follow-up (ETF) survey data and administrative register data
Study design	Compares the difference in outcomes of children from cohorts exposed to different grading policies within a reforming municipality to the difference in outcomes between children of the respective cohorts in non-reforming municipalities.	Compares the difference in outcomes, e.g. subject grades, of children from cohorts exposed to different grading policies within a reforming municipality to the difference in outcomes between children of the respective cohorts in non-reforming municipalities. The authors expect grading in 6th grade will negatively impact grades in the 7th grade for continuing subjects but will be unrelated or weakly related to grades in 7th grade for the new subjects.	Same as previous study of Klapp et al. (2014); however, outcomes are extended to grades 7-9 and upper secondary school (grade 12) to track the medium-term effects of grading in upper secondary school.	Exploit the same quasi-experimental setting that was used in previous studies. In addition, student self-report in sixth grade is used to identify their self-concept in school subjects (Mathematics and Swedish), social situations, and motivation to improve in school subjects. This dataset is then used to investigate the mediating relations between grading and students' subsequent achievements.	Exploit Swedish school grading reform to find the different effects of early grading along two dimensions, namely students' ability and social economic conditions in the short-term and long-term. Compares the difference in outcomes of children from cohorts (1967 and 1972) exposed to different grading policies within a reforming municipality to the difference in outcomes between children of the respective cohorts in non-reforming municipalities.
Main Outcomes	Years of Schooling, Earnings	School achievement, i.e., school grades in continuous subjects and new subjects in grade 7	School achievement, i.e., school grades in continuous subjects and new subjects in grades 7-9; Educational attainment in upper secondary school (grade 12)	School grades in grade 7.	Academic motivation, test scores, GPA, educational attainment, earnings

Source: Own compilation of the authors.

cally significant effects on educational attainment, academic choices, and labor market outcomes. He does, however, uncover heterogeneous effects involving the ability and SES dimensions. In the short-term, early grading decreases grades and motivation to go to school for students with low ability and low SES. However, being graded early helps low-ability/low-SES students to optimize their educational choices and opt for more suitable vocational paths. High-ability/high-SES students benefit from early grading in terms of better grades during compulsory school. Owing to the optimization of educational choices, the effects of early grading are persistent over the long-term and affect labor market outcomes. In particular, low-ability/low-SES students experience an upward income trend, whereas their high-ability/high-SES peers suffer from downward income mobility.

CONCLUSION

In summary, postponing grade assignments in Swedish schools has been found to have mixed effects

on student achievement. The effects differ according to student gender, socio-economic backgrounds, and throughout a student's life cycle. A clear-cut endorsement of the Swedish model therefore cannot be made. More empirical evidence in different contexts is needed to determine whether students should receive grades already in primary school. The grading reforms in several German states since the 1970s provide an alternative setting, which is currently being studied at the ifo Center for the Economics of Education as part of the "Efficiency and Equity in Education: Quasi-Experimental Evidence from School Reforms across German States (EffEE)" project funded by the Leibniz association.

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Paola Profeta¹

Gender Equality and Public Policy

Progress toward gender equality has been constant and continuous over the past several decades. However, the road to achieving equality between men and women, in particular with respect to economic opportunities and political empowerment, is still long. There is a serious risk that this long road will get even longer and more difficult as a consequence of the current pandemic. The outbreak of Covid-19 exacerbates existing gender differences in the labor market, at least in the short-term (Alon et al. 2020), because women are more vulnerable workers than men and because they have borne most of the burden of domestic tasks and childcare during the lockdown. In this context, it is crucial to understand which policies can be used to promote gender equality.

How to promote a more gender-equal context in which policies can be effective depends on several factors. The experience of Covid-19 suggests that the presence itself of a gender-balanced policy-making leadership can make a difference and help promote successful strategies (Profeta 2020b).

In the following section, I will briefly discuss which policies can promote female employment and how female leadership matters in public policy. This discussion is particularly meaningful with regard to the gender implications of the Covid-19 pandemic.

PUBLIC POLICY AND GENDER EQUALITY

Do Family Policies Promote Female Employment?

To provide an initial assessment of this relationship, I collected data from OECD statistics on family policies for 35 OECD countries spanning the period from 1970 to 2016. I concentrate on parental leaves and childcare. Table 1 shows the results of a regression analysis which estimates the female employment rate (aged 25-54) as a function of the length and generosity of parental leaves measured by the number of weeks and percentage paid (column 1) and as a function of the childcare expenditure (column 2) separately. Column 1 shows that the number of maximum weeks of job-protected leave shares a hump-shaped relationship with the female employment rate: a greater period of leave is associated with higher female employment up to a certain level, after which a further increase in the period of leave is related to lower female employment. Column 3 provides a joint estimate of the generosity of parental leaves and childcare: the generosity of the payment is negatively related to female employment,

¹ I thank Rosa Gobetti for her research assistance.

ABSTRACT

Gender equality and public policy are strictly inter-related. On the one hand, public policies—which include childcare, maternity, paternity and parental leave—have a positive relationship with female employment rates and are thus advocated as a tool for accelerating progress toward gender equality. On the other hand, women as economic agents may themselves have an impact on policies: the changing role of women in families and societies and their greater representation in decision-making positions contribute to focusing and redirecting policy agenda toward items that ultimately reduce gender gaps. How to start this vital process is crucial yet difficult. It is particularly relevant at this time during the Covid-19 pandemic, owing to the risk of possibly exacerbating gender differences and enlarging the existing gender gaps.

whereas childcare is positive and highly significant. Column 4 confirms the strong role of childcare when the dependent variable is the employment gap as the difference between male and female employment rate. All regressions include country and year fixed effects.

Results in Table 1 are obviously simple correlations and do not have to be interpreted in a causal way. They suggest that family policies may help to promote female employment and that the specific design (for example, the length and generosity of the leave) matters and thus has to be carefully evaluated. They also suggest that childcare is a powerful policy in reducing gender gaps. Several studies based on micro evidence confirm this relationship (see Profeta 2020a for a review).

Several countries have reacted to Covid-19 by introducing, among other measures, policies directed at families. These measures are meant to support family needs and their work-life balance, such as additional time for parental leave or in-kind benefits (such as baby-sitter vouchers), which have been introduced in particular during the lockdown and upon closure of schools. They are also meant to support working women.

Figure 1 shows for a large sample of countries around the world



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Table 1

Family Policy and Female Employment

	(1) Fem. Empl. Rate	(2) Fem. Empl. Rate	(3) Fem. Empl. Rate	(4) Empl. Gap
Max. weeks job-protected leave	0.483*** (0.128)		0.265** (0.109)	-0.254** (0.095)
Max. weeks squared/100	-0.212*** (0.072)		-0.094 (0.060)	0.079 (0.053)
Percentage of the total paid leave	-0.028 (0.046)		-0.101** (0.041)	0.071* (0.041)
Average payment rate	-0.086 (0.065)		-0.083* (0.043)	0.057 (0.035)
Early childcare expenditures		16.29*** (3.464)	16.78*** (3.342)	-17.59*** (3.706)
Constant	52.02*** (4.418)	58.15*** (1.685)	53.06*** (3.421)	37.95*** (2.786)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	685	853	477	477
R2	0.490	0.330	0.560	0.585
Number of countries	22	34	19	19

Note: OLS estimations at the country level. OECD countries. All specifications include country and year dummies. Data refer to full-time employees and self-employed employees. *Female employment rate*: the employment/population ratio to men 25-54. *Employment gap*: the male-female difference in employment rates (%). *Maximum number of weeks of job-protected leave*: maximum weeks of job-protected maternity, parental and home care leave available (and its squared version). *Percentage of the total paid leave*: total weeks of paid maternity, parental and home care payments available to mother (%). *Average payment rate*: mother's average payment rate. *Early childcare expenditure*: public spending on early childhood education and care (% GDP). *Sample period*: 1970-2016 Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Elaboration on Profeta (2020a).

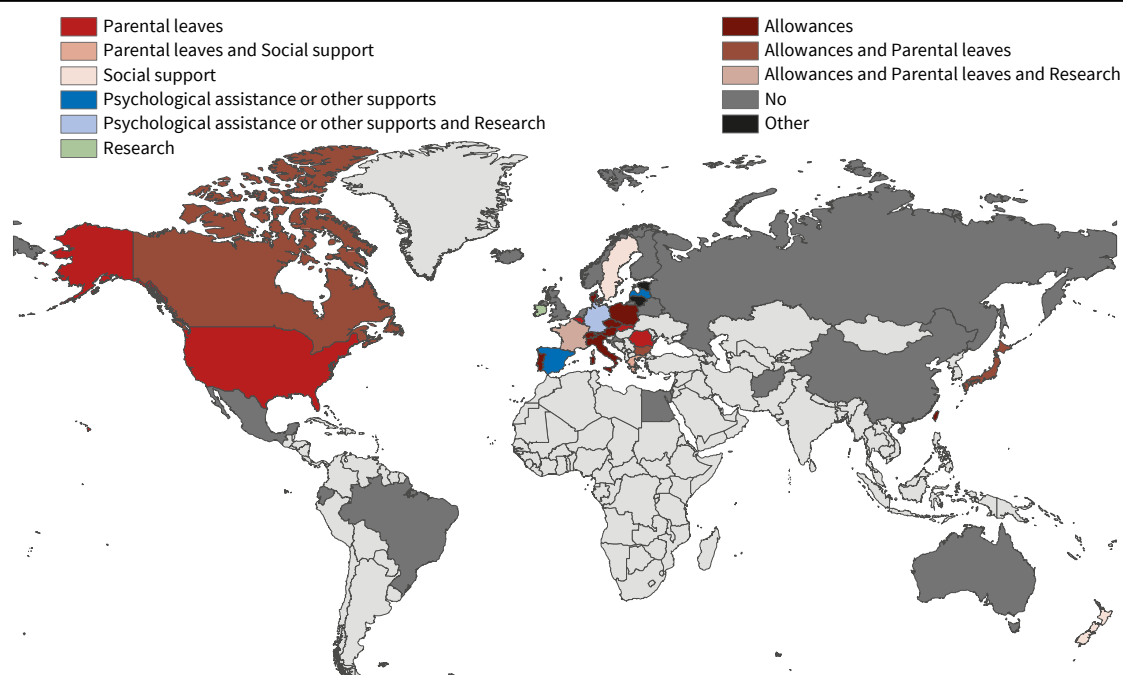
which policies have been introduced: allowances and parental leaves represent the most common measures. They include benefits to parents with small children and more time for caring the children. Although we understand the positive implications of these policies on families, we point out the lack of massive investment in childcare, which has been

shown to be the more effective policy against gender gaps.

Other measures also matter in terms of gender equality, some through a less direct relationship. One important, growing role is flexible work arrangements, which introduce a flexible place and time of work, and which have substantially increased during the pan-

Figure 1

Family Policies Implemented as a Response to Covid-19 Pandemic



Source: Author's elaboration on data from OECD and European Systemic Risk Board.

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demic. Flexible work arrangements may have effects on the reduction of gender gaps in domestic activities (Angelici and Profeta 2020). By increasing the participation of men involved in housework and childcare, they have the potential of rebalancing the asymmetry in the allocation of chores within the family, which in turn may drive a reduction in gender differences in the labor market. To what extent this transmission channel is at work is still uncertain and will probably only become visible over the long term. In fact, recent data shows that during the Covid-19 pandemic, despite the massive use of working from home and flexible working hours, women have had to bear most of the burden of domestic and childcare tasks (Del Boca et al. 2020).

WOMEN'S REPRESENTATION AND GENDER EQUALITY

Do Women Matter in Public Policy?

Women in decision-making positions may themselves have an impact on policies, as they contribute to focusing and redirecting the policy agenda toward items which, in the end, reduce gender gaps. To provide an overview of this relationship, in parallel to what was stated in the previous section, I collected data on family expenditures and childcare expenditures (as % of GDP) in OECD countries and compare them with the share of seats held by women in national parliaments. Table 2 presents the result of OLS regressions at the country level, including a country and year dummy and a set of control variables (GDP per worker, female labor force participation, percentage of elderly over the age of 65): a greater presence of women holding positions in federal government is associated with higher family expenditures and higher childcare expenditures.

The simple correlations shown in Table 2 are suggestive and only partially informative, and obviously say nothing about causal relationships. It may be the case that in countries where family expenditures are higher, more women are elected to positions in federal government because the high level of expenditures reduces gender gaps or because the country is characterized by a culture that is more open to gender balance in all dimensions. To solve this endogeneity problem, research has often used the introduction of gender quotas, which exogenously increase the share of women. Gender quotas have been largely studied both in the business and in the political dimension (Profeta 2020).

Another well-studied identification strategy exploits the existence of close gender-mixed races. Using micro-level data, a recent paper on Bavaria in Germany has found evidence that local female politicians increase the availability of childcare (Baskaran and Hessami 2018). However, existing studies do not all draw the same conclusions, i.e., there is no consensus

in terms of the effect of gender of the politician on the policy implemented.

The relationship between female leadership and public policy has also attracted a great deal of attention in recent times during the Covid-19 pandemic. Avivah Wittenberg-Cox, in an article published by Forbes, noticed that countries led by women are performing better in dealing with the Covid crisis: Denmark, Finland, Germany, Iceland, New Zealand, Norway and Taiwan. Obviously, this simple correlation cannot have an a priori causal interpretation, yet it seems that the style of female leadership does matter in dealing successfully with crisis. This style includes telling the truth, the ability to be decisive, the use of advanced technology and innovative communication. Several recent papers have tried to provide rigorous empirical support to this anecdotal evidence that countries led by female leaders have been performing better during the Covid-19 crisis (Coscieme et al. 2020; Garikipati and Kambhampati 2020; Sargent and Stajkovic 2020). They argue that the positive performance of female leadership could be the result of the style of policy response adopted by men and women: women have been more proactive and have coordinated with policy responses.

Does the evidence regarding female leadership during this Covid-19 crisis reflect the existence of a standard “female leadership style”?

Existing preliminary analysis suggests a positive answer. In the following section, I refer to the results in Profeta (2020a) on data from the Comparative Candidate Survey dataset. This dataset collects answers to survey questions posed to a sample of male and female candidates running for national parliaments in different countries from 2005-2013 and 2013-2016. Compared to men, women are shown to be more in favor of women's issues, for example, they are more sensitive to preferential treatment of women when applying for a job. They are more open to immigration, less in favor of military intervention and more in favor of protecting the environment. Moreover, women

Table 2
Percentage of Women in Parliament Involved in Forming Public Policy (Family Expenditures, Childcare)

	Public spending on families (% of GDP)	Public spending on early childhood education and care (% GDP)
Seats held by women in national parliaments (%)	0.0144* (0.00748)	0.00576* (0.00317)
Constant	2.686* (1.332)	- 1.308* (0.761)
Country FE	Y	Y
Year FE	Y	Y
Observations	184	195
R2	0.035	0.129

Note: OLS estimations at the country level, OECD countries. All specifications include controls: GDP per worker, Female labor force (%), population aged 65+, country and year dummies. Sample period: 2005, 2007, 2009-2013. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Elaboration on Profeta (2020).

are more ready to sacrifice their own opinions when they differ from the preferences of voters of parties. Although these results should be considered preliminary, they open the way for a new argument in favor of gender equality: the style of leadership of female politicians may contribute to their performance, perhaps particularly in period of crisis.

CONCLUSION

To identify the relationship between gender equality and public policy is challenging. The relationship is also a dynamic one and evolves in concert with economic and social changes. Covid-19 is expected to have a crucial impact on both aspects of these relationships and thus on ultimate gender gaps. Although I have provided some examples, further and more rigorous studies are needed to understand how public policies contribute to promoting gender equality, and how women in decision-making positions can make a difference during these current times of pandemic and, more generally, in future economies.

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Clara Albrecht, Yvonne Giesing and Daria Schaller

How to Become an EU Citizen: The Acquisition of Citizenship via Naturalization

In recent years, migration to Europe has become increasingly important. Since the migrant influx in Europe in 2015, integrating migrants has become an important issue in all European countries. In fact, the percentage of foreigners moving into European countries has been steadily increasing since the 90s. In 1990 there were about 48 million international migrants, but by 2019, more than 82 million international migrants were living in Europe—an increase of nearly 10 percent compared to 2015, when around 75 million migrants were counted—and this number is expected to rise further in the future. More than half of the international migrants, around 42 million, have immigrated from another European country. Their number has almost doubled from 27 million in 1990 to 40 million in 2015 (International Organization for Migration, 2020). Accordingly, the number of naturalizations in European countries has increased as well. Whereas in 2008 about 575,000 people were naturalized in the 28 European Union (EU) countries, the number rose to about 672,000 in 2018 (Eurostat 2020a).

Integrating migrants is thus a highly relevant topic for European countries, which react to migration flows in different ways and pursue different strategies. Legal regulations therefore differ from country to country. Generally, reforms to facilitate naturalization have been on the rise in recent years.

Most countries have special regulations governing the legal status of children born in a country whose parents are foreigners, people married to a country's citizen, or people having studied the language of the respective country, among others.¹ In this article, we will only focus on adult access to the naturalization process, meaning that we will discuss the naturalization process from the standpoint of those persons who are 18 years or older, who are not citizens of their country of residence, but who want to become naturalized citizens.

In the following sections, we will provide a descriptive overview of naturalization figures and conditions, focusing on EU15 countries and Poland as an example of Eastern Europe. We begin by looking at data regarding the total number of naturalizations,

¹ For more detailed information on the acquisition of citizenship at birth, please see: Saurer, J. (2017), "The Acquisition of Citizenship in the OECD Countries", ifo DICE Report 15 (2), 44–47.

ABSTRACT

Migration to and within the European Union has led to a steadily rising number of foreign-born citizens living in EU member states. The naturalization of migrants therefore plays a prominent role in national integration policies. In this article we give an overview of key naturalization figures and facts in EU15 countries and Poland. We compare naturalization numbers and rates and describe the legal regulations for the acquisition of citizenship. We then discuss the controversial case of investor citizenship and conclude by providing evidence for the benefits of a facilitated access to citizenship.

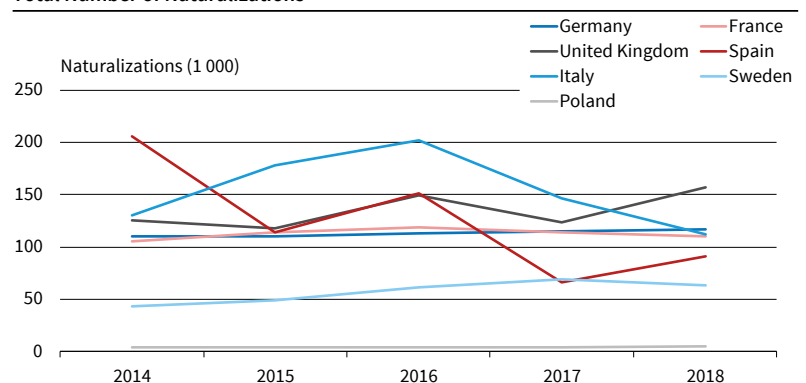
the main countries of origin and the integration process by calculating the naturalization rate. Second, we focus on institutional differences across countries and the naturalization processes. To sum up, we will draw conclusion from our data, followed by some policy implications with respect to naturalizations.

TOTAL NUMBER OF NATURALIZATIONS

Figure 1 illustrates how the total number of naturalizations evolved between 2014 and 2018 in the selected countries. The average number of naturalizations for these years varies widely—from 3,700 annual naturalizations in Poland up to 205,900 natu-

Figure 1

Total Number of Naturalizations



Quelle: Eurostat (2020a).

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ralizations in Spain. However, when comparing naturalization numbers, the percentage of foreigners in each country's population as well as the total population also need to be considered (see further below).

For Germany, the number of naturalizations has remained nearly constant between 110,000 and 116,000 per year. This puts Germany in the middle of the ranking. Similarly, France's naturalization numbers have not shown strong variation and are similar to Germany's. Spain has experienced a sharp decline in naturalizations—by 43 percent between 2014 and 2018. We see an abrupt decline in the number of naturalizations in 2015 and again in 2017, whereas numbers increased slightly in 2016. This increase could have been the result of a law that went into effect in October 2015 and eased the path to citizenship for descendants of Jews who were forced to flee Spain. The Spanish government estimated at that point that about 90,000 people would apply for citizenship as soon as the new law went into effect. The subsequent sharp decline in 2017 was again followed by an increase in the number of naturalizations in 2018, which could be due to a political change. Pedro Sánchez of the social-democratic party PSOE replaced the previous Prime Minister Mariano Rajoy and his conservative Christian-democratic party PP in mid-2018. Shortly after the election, the new Prime Minister immediately announced a new Citizenship and Integration Plan and a fund to support immigrant integration.

In Italy, the number of naturalizations reached a peak in 2016 at 201,600 naturalizations, followed by a decline that fell below 2014 numbers. Since then, the number of naturalizations has continued to decline. During 2015, 2016 and 2017, Italy led with the

highest numbers of naturalizations among the selected countries. In 2018, with the country's lowest reported number for the observed period, Italy has about the same number of naturalizations as Germany and France, and only the United Kingdom exceeds this number. The peak in 2016 can be explained by amendments changing the Italian citizenship law that led to an easier naturalization process for children born in Italy to foreign parents, for foreign citizens who immigrated before the age of twelve and for people born in Italy and with uninterrupted residence until the age of 18.

The United Kingdom has one of the highest naturalization numbers in our comparison. Whereas the number of naturalizations in 2017 was lower than in 2016, in 2018, the number increased to its highest level ever. The rise in the number of naturalizations in 2018 may be result of Brexit, and this number is expected to increase.

The number of naturalizations in Sweden has continuously increased until 2017 and dropped slightly in 2018. With around 50,000 naturalizations per year, Sweden has a significantly lower number than most of the other reported countries. However, this is most likely not due to a stricter citizenship law, but rather to the comparatively low number of migrants entering the country.

As the only Eastern European country among the observed countries, Poland has always reported the lowest number of naturalizations. This might be surprising, since Poland has a rather lax citizenship law. People who want to acquire citizenship only need to live in Poland continuously for at least 3 years, whereas this period is significantly longer in other countries, e.g., in Germany, which requires 8 years of continuous residency. But similar to Sweden, the

Table 1
Naturalizations by Country of Origin

Country of destination	Country of origin 1	%	Country of origin 2	%	Country of origin 3	%
Austria	Bosnia and Herzegovina	11,0	Turkey	8,9	Serbia	6,7
Belgium	Marocco	13,4	Romania	6,1	Poland	4,2
Denmark	Sweden	6,5	Germany	5,9	Iceland	5,1
Finland	Russia	19,2	Somalia	9,3	Iraq	6,7
France	Marocco	14,0	Algeria	13,5	Tunisia	6,1
Germany	Turkey	14,3	United Kingdom	5,4	Poland	5,3
Greece	Albania	86,9	Ukraine	1,4	Russia	1,3
Ireland	Poland	17,8	Romania	10,0	United Kingdom	8,4
Italy	Albania	19,4	Morocco	13,8	Brazil	9,5
Luxembourg	Portugal	22,9	France	10,9	Montenegro	7,0
Netherlands	Morocco	10,8	Turkey	9,7	Stateless	0,8
Poland	Ukraine	54,7	Belarus	21,7	Russia	4,8
Portugal	Brazil	32,5	Cape Verde	17,1	Ukraine	8,2
Spain	Morocco	27,9	Bolivia	9,0	Ecuador	8,8
Sweden	Syria	16,6	Somalia	10,6	Statless	8,9
United Kingdom	India	9,6	Pakistan	7,5	Poland	6,1

Source: Eurostat (2020b); United Kingdom (2019).

influx of migrants into Poland is lower than in the other reported countries.

NATURALIZATIONS BY COUNTRIES OF ORIGIN

Table 1 shows the countries of origin of people being granted citizenships in EU15 countries and Poland. The table lists the three main countries of origin and shows the percentage they represent.

This table also shows that in some countries, naturalizations are concentrated on individuals from a few countries.

In Greece, for example, 86.9 percent of all citizenships granted via naturalization were granted to former Albanian citizens in 2018. In Poland, about half of the naturalized citizens were migrants from Ukraine, followed by migrants from Belarus at 21.7 percent. These two countries account for three-quarters of all naturalizations. In Portugal, nearly one third of newly naturalized citizens are of Brazilian origin (32.5), followed by 17.1 percent from Cape Verde. This is due to historical ties and a consequently facilitated access to Portuguese citizenship for descendants of Portuguese citizens who had migrated to the former colonies. In Spain, Moroccans account for 27.9 percent of all naturalized new citizens. Luxembourg mainly grants citizenship to Portuguese people (22.9), Finland to Russian people (19.2) and Germany to Turkish people (14.3). The reason for the last figure is the influx of guest workers in the 1960s and 1970s, which triggered ongoing family reunifications. No such pattern can be observed in Denmark, for example, where Swedes, Germans and Icelanders are the nationalities with the highest percentage of naturalizations, but who only account for about five to six percent of the naturalized citizens in those countries. In contrast, Sweden most commonly grants citizenship to refugees from Syria and Somalia and stateless persons and is the only country in our comparison to do so. This is probably explained by the fact that Sweden facilitates naturalization for those groups with a reduced minimum residence requirement of four years.

NATURALIZATION RATE

Given that the total number of naturalizations is influenced by the number of migrants, it is useful to consider the naturalization rate. The naturalization rate is the ratio between the number of persons who acquire the citizenship of a country and the number of foreign residents in the same country. The rate thus provides information on the relationship between migration and naturalization. This not only makes it easier to compare countries, as mentioned above, but also gives a clue to how migrants are integrated. Again, we observe the EU15 countries and Poland. Interestingly, even though Sweden has a low total number of naturalizations, they have the highest percentage at 3.26 percent, Finland posting 2.44 percent and Lux-

Table 2

Naturalization Rate

Country of Destination	Naturalisation Rate	Percentage
Austria	0,00543001	0,54
Belgium	0,018393748	1,84
Denmark	0,004006329	0,4
Finland	0,024409052	2,44
France	0,013167445	1,32
Germany	0,007846295	0,78
Greece	0,021306017	2,13
Ireland	0,009738137	0,97
Italy	0,017866485	1,79
Luxembourg	0,023912415	2,39
Netherlands	0,012116387	1,21
Poland	0,006722753	0,67
Portugal	0,022239759	2,22
Spain	0,013882022	1,39
Sweden	0,032644063	3,26
UK	0,016808285	1,68

Source: Eurostat (2020b), Eurostat (2020c), Office for National Statistics (2019), The World Bank Group (2020), United Kingdom (2019).

embourg reporting 2.39 percent follow. The countries with the lowest percentage are Austria at 0.54 and Denmark at 0.4, Germany has a rather low ratio with a rate of 0.78 percent. Differences in percentages may be due to different residency durations, different citizenship acquisition laws, as well as to dual citizenship regulations. We will discuss these later in the report.

ACQUISITION OF CITIZENSHIP VIA NATURALIZATION

The most common way to obtain citizenship for foreign-born adults is via ordinary naturalization, meaning that the primary requirement for acquiring citizenship is the length of residence in the country. The minimum required residence period in EU-15 countries and Poland ranges from three to ten years. The mean value is 6.4 years and a 5-year requirement is most common. However, differences regarding the continuity of residence and the residence status play a role.

Additionally, most countries demand language skills and/or country-specific knowledge in their citizenship laws. The only countries where no language skills requirement exists are Sweden and Ireland. In countries where a proof of language skills is a prerequisite for naturalization, the majority demand an intermediate level of the national language. In eight countries, acquiring citizenship is conditional upon passing an either written or oral citizenship test.

Becoming a citizen generally comes at a cost, and prices vary greatly throughout the countries we look at. Luxembourg does not charge anything to become a citizen, whereas Austria charges 1,000 EUR, with Ireland and the United Kingdom demanding the highest amounts for becoming a citizen.

Those who wish to become citizens also need to provide required documentation to be eligible to apply for citizenship. In many countries, foreigners seeking naturalization must provide evidence of no police or criminal record, must verify their identity and submit proof of financial self-sufficiency. Obtaining this documentation can represent an enormous obstacle to applicants since country-of-origin documentation is oftentimes difficult to obtain.

In general, documentation requirements in the Nordic states and northwest Europe are comparatively easy to meet, whereas southern European countries in particular, such as Austria, Luxembourg and Ireland, have established high standards of documentation requirements.

A similar trend can be observed regarding the transparency and objectivity of the citizenship acquisition procedure. Some countries follow a discretionary scheme in which local or regional authorities have a scope for interpretation to decide whether an applicant meets the requirements to be granted citizenship. In contrast, other countries implemented a more objective scheme in which citizenship is a legal entitlement that must be granted if all defined requirements are met. Again, southern European states tend to have a more discretionary procedure, whereas in northwest Europe procedures are more rights-based and transparent. Among the most discretionary requirements for naturalization is the economic resources requirement. The wording on official government websites listing naturalization requirements remains vague in many cases (Bauböck et al. 2013).

Acceptance of dual citizenships is the most striking trend in citizenship attribution across EU-15 countries.² Nowadays, only Germany, Austria, the Netherlands and Spain do not generally allow dual citizenship for first generation immigrants.

Some interesting observations can be made when taking both naturalization rates and national citizenship laws into account. Sweden has the highest naturalization rate and scores high in all aspects of citizenship accessibility, meaning that the residence time required is low, that neither a citizenship test nor a language test is required and that the costs are fairly low. Finland has the second-highest naturalization rate and is relatively liberal and offers inclusive regulations but demands knowledge of the local language. Both countries accept dual citizenship.

At the other end of the spectrum, Austria and Denmark show the lowest naturalization rates and at the same time have strict legal regulations, such as a long continuous residence requirement and the necessity of passing both citizenship and language tests. Costs involved in becoming a citizen in these countries are comparatively high and range about 500 EUR. Austria does not allow dual citizenship.

² For more detailed information on dual citizenship please see Gallagher-Tasked, K. and Y. Giesing (2017), "Dual Citizenship in the EU", ifo DICE Report 15 (3), 43–47.

Germany and Ireland are interesting examples because of the emphasis placed on discretionary procedures. While Germany is restrictive regarding formal requirements, the opposite is the case for Ireland. Still, both countries show similar and comparatively low naturalization rates. Considering the formal requirements, Ireland would be expected to count higher naturalization rates, whereas Germany would be expected to have low rates. The main reason for the low rates in Ireland are probably due to the high level of discretionary elements inherent in the procedure, whereas Germany's restrictive regulations are to some extent eased by the more rights-based and objective procedures.

Poland deserves a closer look since it has the lowest required residence time and at first glance does not appear to have any other hard-to-overcome hurdles. Still, the naturalization rate of only 0.67 is far below the average rate of 1.56 percent. However, Poland offers another channel through which citizenship can be acquired: the president has the right to grant citizenship upon request without any legal requirement, not even residence in the country is required in this highly discretionary procedure. In 2018, nearly 2,000 individuals made use of this special citizenship acquisition channel that is solely dependent on the whim of the president.

The overall picture leads to the conclusion that minimal formal requirements in combination with a transparent, rights-based procedure, together with the acceptance of dual citizenship, lead to higher rates of naturalizations.

CITIZENSHIP FOR SALE: THE CASE OF INVESTOR CITIZENSHIP

Naturalizations can also pose a problem if the underlying objective is not integration but rather economic reasons. Some European countries seek to bump their state treasuries by granting naturalizations to foreigners in return for payment and investment in the country. EU institutions in particular are severely critical of this practice since "granting the nationality of a Member State also means granting EU citizenship and the rights attached to it" (European Commission 2014). Among EU member states, Malta, Cyprus and Bulgaria allow immigrants to buy their citizenship. These programs are called "Citizenship by Investment" and function as follows: An investor places money into a piece of real estate, companies or government bonds and in return receives the passport of that country. In Cyprus, about two million euros are needed and ownership in a piece of property in the country; in Malta, 650,000 EUR must be paid into a national investment fund, another 150,000 EUR must be invested and a piece of property in Malta must be rented or owned; in Bulgaria, an investment of one million euros is "requested" in order to obtain an investor citizenship (European Commission 2019). Most

Table 3

National Requirements for Ordinary Naturalization

EU15	Residence Time	Citizenship Test	Proof of Language skills	Costs	Dual Citizenship
Austria	10 years	Yes	Yes (B1 level)	1.100 bis 1.500 Euro	No
Belgium	5 years	No	Yes (A2)	150 EUR	Yes
Denmark	9 years	Yes	Yes (B2)	3.800 DKK (aprox. 510 EUR)	Yes
Finland	5 years	No	Yes (B1)	420 EUR Electronic Application, 520 EUR paper application	Yes
France	5 years	Yes (interview)	Yes (B1)	50 EUR	Yes
Germany	8 years	Yes	Yes (B1)	255 euros	No
Greece	7 years	Yes (interview)	Yes (B1 oral, A1 written Greek)	550 EUR	Yes
Ireland	5 years	No	No	175 EUR for applying, 950 EUR for the certificate	Yes
Italy	10 years	No	Yes (B1)	200 EUR	Yes
Luxembourg	5 years	Yes	Yes (A2 spoken test, B1 listening test)	No	Yes
Netherlands	5 years	Yes	Yes (A2)	901 EUR	No
Portugal	6 years	No	Yes (A2)	250 EUR	Yes
Poland	3 years	No	Yes (B2)	40 EUR	Yes
Spain	10 years	Yes	Yes (A2)	102 EUR	No
Sweden	5 years	No	No	1500 SEK (aprox. 145 EUR)	Yes
United Kingdom	5 years	Yes	Yes (B1)	£1330 (aprox. 1500 EUR)	Yes

Source: National governments websites, own collection.

investors come from countries outside Europe, such as Asia, the Arab world, Russia or Africa. In Cyprus, for example, 19.6 percent of the people naturalized in 2018 were Russian, and in Malta, Russians constituted the third-most common nationals to naturalize in 2018. During that same year, Turks comprised the largest group 21 percent to whom Bulgaria sold investor citizenships, Russians came in second at 19% and Ukrainians ranked third at 19 percent (Eurostat 2020b). The European Commission criticizes a lack of transparency regarding the procedure and operation of these investor citizenship schemes. For Bulgaria and Cyprus no information on the number of “sold” passports is published; the identities and the countries of origin of the newly naturalized citizens are completely unknown. Malta publishes an annual report on the number of investor citizenship applications it receives, accepts and rejects for each year, but provides no detailed information about the countries of origin (European Commission 2019). In Malta, investor citizenship is capped at 1,800 applications and plays a crucial role within its modes of citizenship acquisition since it accounted for almost 74 percent of all successful naturalizations in 2018 (Eurostat 2020b and Oriip 2018 and 2019). Acquiring the “golden passport” comes with the additional benefit of becoming a citizen of the EU, which, among other privileges, grants its citizens the right to move about freely among member countries.

Since physical presence prior to being granted citizenship is not a requirement in the three countries offering citizenship by investment, the institutions of

the EU have raised concerns regarding those schemes. In 2014, the European Commission stated that purchasing citizenship through investment does not meet the minimum requirement of establishing a genuine link to a country (European Commission 2014). In addition, investor citizenship constitutes a risk to the EU member states and the EU as a whole: First, security checks do not always meet the standards imposed by the EU, e.g., the highly discretionary process of granting citizenship via the investor scheme can lead to the acceptance of applicants who do not meet certain security requirements, nor are other EU member states consulted on applicants for investor citizenship. Second, a number of gray zones exist regarding the prevention of money laundering, especially in the case of direct cash payments to governmental bodies. Third, the investor citizenship schemes in Malta and Cyprus could potentially be misused to circumvent tax payments (OECD 2018).

Finally, we look at naturalization and elections. In many cases, those naturalized with investment citizenships do not live in the country permanently, but still have the right to vote. They therefore have a say in the future of the country without bearing the consequences for their voting decision. In contrast, migrants who have not had yet the chance to naturalize, even though they have resided in the country for years, usually have no voting rights and may feel that their needs are not represented. In addition to the right to vote in the respective country, naturalized people gain the right to vote in EU elections, meaning that the underlying problems are the same.

CONCLUSION

Naturalizations have gained importance in Europe due to the rising number of migrants and the high percentage of permanently residing foreigners in many European countries. Migration and naturalization processes have increasingly become part of the political debate and decisions on legislation are taken regularly. There are several reasons why the implementation of laxer naturalization laws is beneficial. First, democratic participation is an essential component of democratic systems. Elections ensure that citizens can participate in decision-making and elect the representatives they believe best represent their needs. Migrants residing in the country of destination without being naturalized have little chance to participate in political decisions and may feel that their needs are not represented. Furthermore, naturalization acts as catalyst for integration. Hainmueller et al. (2017) show that long-term social integration of migrants strongly improves with receiving the host country's citizenship. The effect is even stronger when naturalization occurs at an early stage of residency and therefore provides good arguments for implementing liberal immigration policies with a relatively short residency requirement as a prerequisite for naturalization. Also, Gathmann and Monscheuer (2020) find that naturalization boosts integration through the channel of higher earnings. They show that naturalized immigrants have large and persistent wage gains and invest more in skills.

In some countries, it is already possible for non-naturalized residents to vote in local elections. Interestingly, a study in Sweden from Bevelander and Pendakur (2011) shows that acquiring citizenship is a factor that explains if immigrants vote: Immigrants who are naturalized are far more likely to vote than those who have not become citizens. Since voting can be seen as a soft measure of integration, this also supports the hypothesis that naturalized people are more likely to integrate into their adopted society. Voting in elections at the national level, however, is not permitted in most countries. This could, nevertheless, be a step toward integrating migrants and enhancing dialogue in the society.

Second, becoming a naturalized citizen can also result in positive outcomes in terms of employment.

Peters, Vink and Schmeets (2018) found that naturalization leads to a one-time boost in the probability of employment after naturalization, partly due to positive signaling, among other reasons. Moreover, the probability of employment even before the planned naturalization is higher, since migrants planning naturalization often actively invest in their human capital. Since employment is also an important factor for integration, this channel could also contribute to better integration.

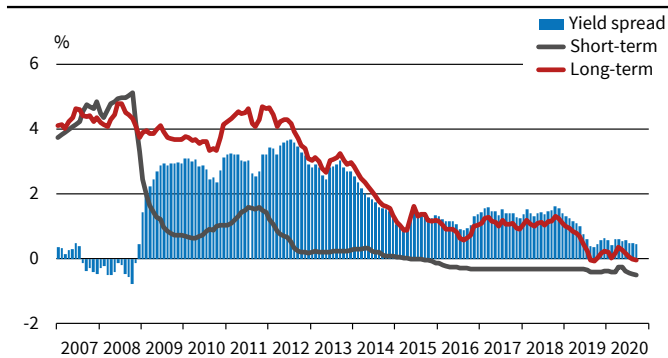
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Statistics Update

Financial Conditions in the Euro Area

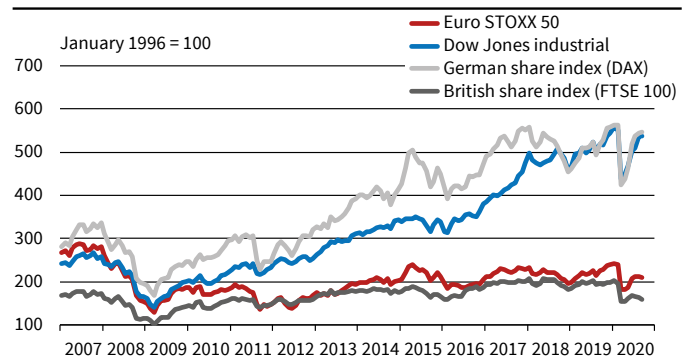
Nominal Interest Rates ^a



^a Weighted average (GDP weights).
Source: European Central Bank; calculations by the ifo Institute. © ifo Institute

In the three-month period from July 2020 to September 2020 short-term interest rates decreased: the three-month EURIBOR rate amounted to -0.49 in September 2020 compared -0.44% in July 2020. The ten-year bond yields also decreased from 0.05% in July 2020 to -0.03% in September 2020, while the yield spread reduced from 0.49% to 0.46% between July 2020 and September 2020.

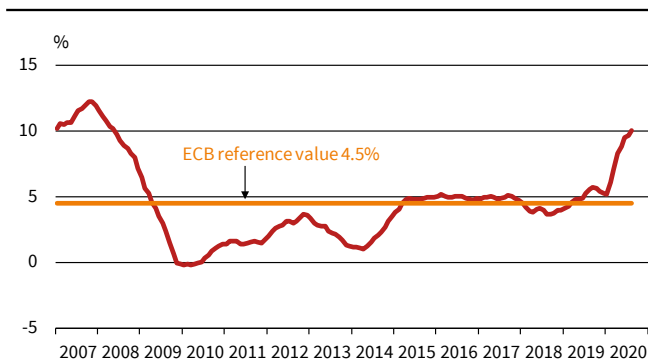
Stock Market Indices



Source: Deutsche Börse; Dow Jones; FTSE; STOXX. © ifo Institute

The global fears about the spread of the Coronavirus, oil price drops caused by an oil price war between Russia and the OPEC countries, and the possibility of a recession led to the stock market crash in March 2020, and global stocks saw a severe downturn in this month. Yet the German stock index DAX continued to grow in September 2020, averaging 12,961 points compared to 12,741 points in July 2020, while the UK FTSE-100 decreases from 6,167 to 5,933 in the same period of time. The Euro STOXX amounted to 3,261 in September 2020, down from 3,316 in July 2020. On the other hand, the Dow Jones Industrial increased, averaging 27,752 points in September 2020, compared to 26,562 points in July 2020.

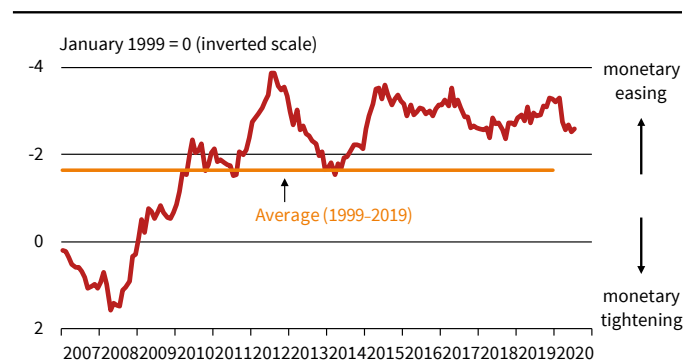
Change in M3 ^a



^a Annual percentage change (3-month moving average).
Source: European Central Bank. © ifo Institute

The annual growth rate of M3 increased to 10.4% in September 2020, from 9.5% in August 2020. The three-month average of the annual growth rate of M3 over the period from July 2020 to September 2020 reached 10,0%.

Monetary Conditions Index

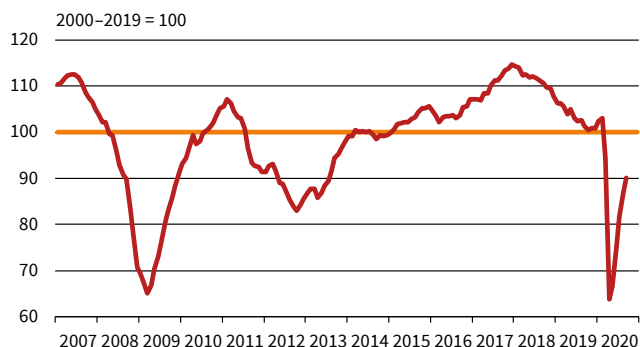


Source: European Commission. © ifo Institute

Between April 2010 and July 2011, the monetary conditions index had remained stable. Its rapid upward trend since August 2011 had led to the first peak in July 2012, signaling greater monetary easing. In particular, this was the result of decreasing real short-term interest rates. In May 2017 the index had reached one of the highest levels in the investigated period since 2007 and its slow downward trend was observed thereafter. A continuous upward development prevailed since October 2018 was abruptly stopped in March 2020 as the Covid-19 crisis started. A slight increase of the index was observed in July 2020.

EU Survey Results

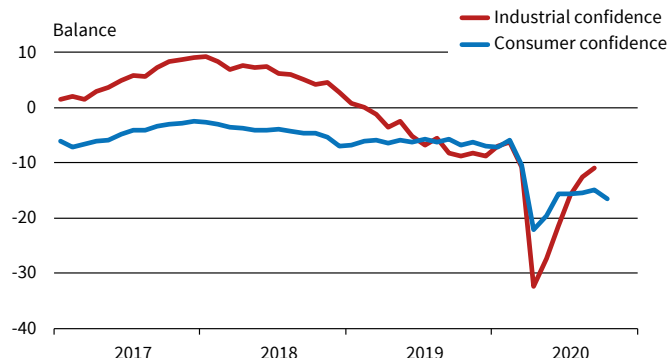
EU27 Economic Sentiment Indicator
Seasonally adjusted



Source: European Commission. © ifo Institute

In September 2020 the recovery of the Economic Sentiment Indicator (ESI) continued from the record slumps of March and April caused by the global Covid-19 shock: it increased in both the euro area (by 3.6 points to 91.1), and the EU27 (by 3.4 points to 90.2).

EU27 Industrial and Consumer Confidence Indicators
Percentage balance, seasonally adjusted

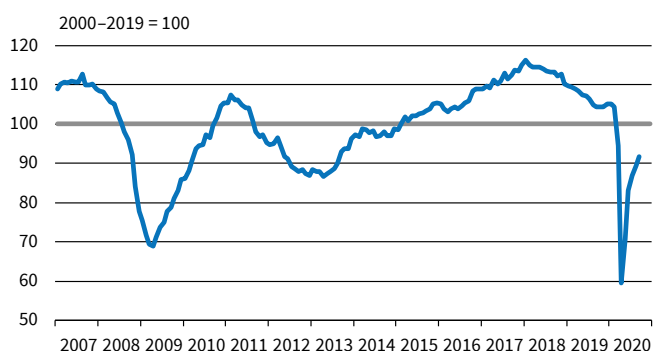


Source: European Commission. © ifo Institute

* The industrial confidence indicator is an average of responses (balances) to the questions on production expectations, order-books and stocks (the latter with inverted sign).
** New consumer confidence indicators, calculated as an arithmetic average of the following questions: financial and general economic situation (over the next 12 months), unemployment expectations (over the next 12 months) and savings (over the next 12 months). Seasonally adjusted data.

In September 2020, the *industrial confidence indicator* increased by 1.6 in the EU27 and by 1.7 in the euro area (EA19). The *consumer confidence indicator* also increased by 0.6 in the EU27 and by 0.8 in the EA19 in September 2020.

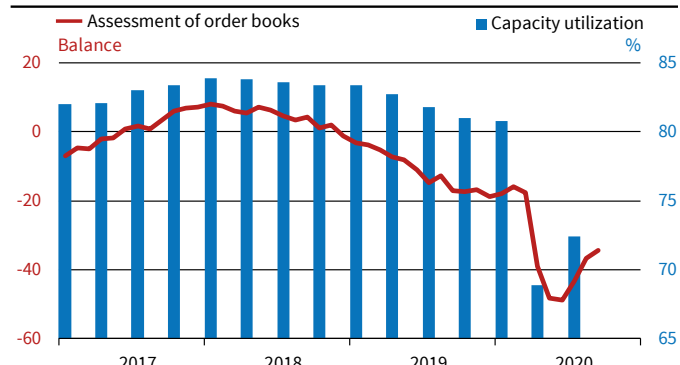
EU27 Employment Expectations Indicator
Seasonally adjusted



Source: European Commission. © ifo Institute

In September 2020 the Employment Expectations Indicator (EEI) improved for the fifth month in a row by 2.3 points to 91.8 in the euro area and by 2.4 points to 91.8 in the EU27.

EU27 Capacity Utilisation and Order Books in the Manufacturing Industry
Seasonally adjusted



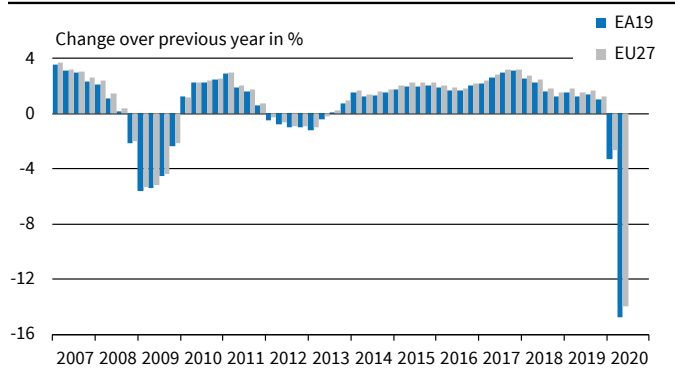
Source: European Commission.

© ifo Institute

Managers' assessment of *order books* reached - 34.5 in September 2020, compared to - 36.7 in August 2020. In July 2020 the indicator had amounted to - 43.8. *Capacity utilization* stood at 72.4 in the third quarter of 2020, up from 68.9 in the second quarter of 2020, again showing the improvement from the Covid-19 shock.

Euro Area Indicators

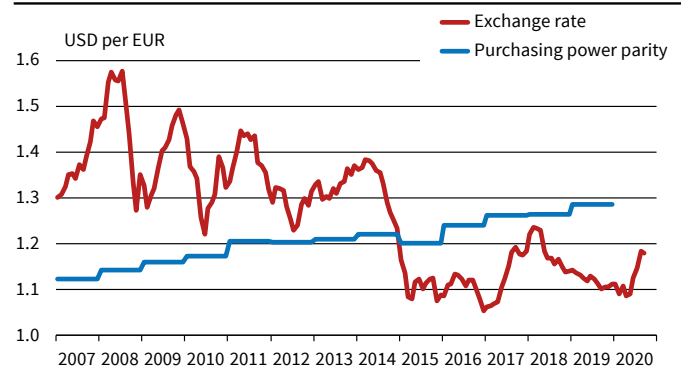
Gross Domestic Product in Constant 2015 Prices



Source: Eurostat. © ifo Institute

According to the Eurostat estimates, GDP decreased by 11.8% in the euro area (EA19), and by 11.4% in the EU27 during the second quarter of 2020, compared to the previous quarter. These were the sharpest declines observed since 1995. In the first quarter of 2020 GDP had decreased by 3.7% in the EA19 and by 3.3% in the EU27. Compared to the second quarter of 2019, i.e., year over year, seasonally adjusted GDP decreased by 14.7% in the EA19 and by 13.9% in the EU27 in the second quarter of 2020.

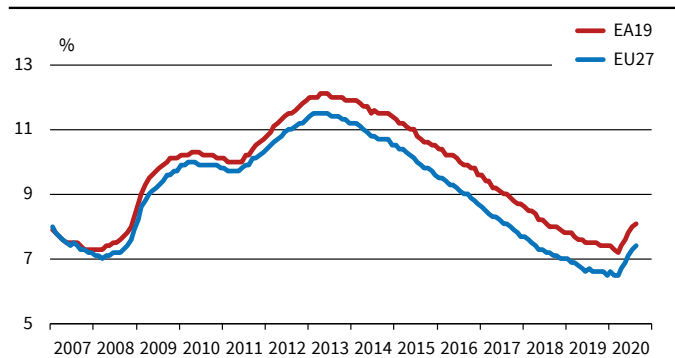
Exchange Rate of the Euro and Purchasing Power Parity



Source: European Central Bank; OECD; calculations by the ifo Institute. © ifo Institute

The exchange rate of the euro against the US dollar averaged approximately 1.17 \$/€ between July 2020 and September 2020. (In June 2020 the rate had also amounted to around 1.13 \$/€.)

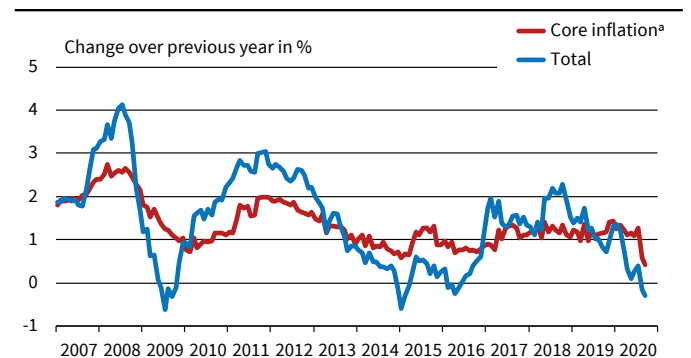
Unemployment Rate



Source: Eurostat. © ifo Institute

Euro area unemployment (seasonally adjusted) amounted to 8.1% in August 2020, up from 8.0% in July 2020. EU27 unemployment rate was 7.4% in August 2020, again up from 7.3% in July 2020. In August 2020 the lowest unemployment rate was recorded in Czechia (2.7%), Poland (3.1%) and Malta (4.1%), while the rate was highest in Greece (18.3%) and Spain (16.2%).

Euro Area Inflation Rate (HICP)



^a Total excl. energy and unprocessed food. Source: Eurostat. © ifo Institute

Euro area annual inflation (HICP) amounted to -0.3% in September 2020, down from -0.2% in August 2020. Year-on-year EA19 core inflation (excluding energy and unprocessed foods) also went down to 0.4% in September 2020, from 0.6% in August 2020.



Balancing New Challenges: Sustainable and Inclusive Growth in Europe

25 – 26 November 2020

25 November 2020, hosted by Monika Jones

- 12:45 Welcome from **Monika Jones**
12:50 Welcome address, **Clemens Fuest**
(President, ifo Institute & EconPol Europe)
- 13:00 Keynote speech: How to Safeguard Sustainable Financing for the EU
Johannes Hahn
(Commissioner of Budget and Administration)
- 14:15 Panel Discussion: Balancing New Challenges and Sustainable and Inclusive Growth for Europe with
Ivan Faiella
(Senior Economist, Banca d'Italia)
Jörg Kukies
(State Secretary at the German Federal Ministry of Finance)
Emmanuel Moulin
(Director General of the French Treasury)
Piroska Nagy Mohacsis
(Interim Director of LSE's Institute of Global Affairs)
- 15:25 Closing remarks from Monika Jones

26 November 2020, hosted by Jennifer Baker

- 9:00 Welcome from **Jennifer Baker**
- 9:05 PANEL 1
EU Integration and Solidarity
- 10:50 PANEL 2
Novel Regulatory Approaches for Climate Change Mitigation
- 13:30 PANEL 3
Productivity of the Public Sector and Public Procurement
- 15:30 Panel Discussion:
The US Election: What Impact on EU-US-Asia Trade Relations?
with
Anna Ashton
(Senior Director for Government Affairs, US-China Business Council)
Rüdiger Bachmann
(Professor of Economics, University of Notre Dame)
Lisandra Flach
(Director of the ifo Institute Center for International Economics)
Marie Kasperek
(Executive Director, Institute of International Economic Law, Georgetown Law; Non Resident Senior Fellow, Atlantic Council)
- 17:00 Closing summary from Jennifer Baker
17:05 Closing remarks from Clemens Fuest



Watch *these* lectures and debates in our livestream on www.econpol.eu/live



Welcome to EconPol Europe's 2020 Annual Conference

This year, the conference will be held completely online and we are delighted to welcome experienced print and broadcast journalists Jennifer Baker and Monika Jones as hosts.

On day one, we are honored to welcome Johannes Hahn, Commissioner of Budget and Administration at the European Commission, to deliver the keynote speech, on the topic **'How to Safeguard Sustainable Financing for the EU.'**

His keynote speech will be followed by a debate from a panel of highly respected guests, to whom we extend a very warm welcome. **Balancing New Challenges: Sustainable and Inclusive Growth for Europe** will be discussed by Ivan Faiella, Senior Economist at Banca d'Italia; Jörg Kukies, State Secretary at the German Federal Ministry of Finance; Emmanuel Moulin, Director General of the French Treasury, and Piroska Nagy Mohacsis, Interim Director of LSE's Institute of Global Affairs. Day two will, as in previous years, have an academic focus.

Topics of our panels include **EU Integration and Solidarity**, **Novel Regulatory Approaches for Climate Change Mitigation and Productivity of the Public Sector and Public Procurement**. However, we end our conference with something a little different. Being online allows us to extend our invitations to guests further afield, and we're very happy to welcome a panel of guests based mainly in the US for a very topical discussion on **the US Election: What Impact on EU-US-Asia Trade Relations?**

Joining us on the panel are Anna Ashton, Senior Director for Government Affairs at the US-China Business Council; Rüdiger Bachmann, Professor of Economics, University of Notre Dame; Lisandra Flach, Director of the ifo Institute Center for International Economics and Marie Kasperek, Executive Director of the Institute of International Economic Law, Georgetown Law and Non Resident Senior Fellow at the Atlantic Council. Clemens Fuest will, as always, open and close the conference.



Leibniz Institute for Economic Research at the University of Munich



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