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## Funding identity: Hungary's efforts to preserve its minority in Slovakia

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# Working Papers

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# Funding Identity: Hungary's Efforts to Preserve Its Minority in Slovakia

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## Abstract

This paper presents causal evidence on how financial aid for Hungarian minorities in Slovakia leads to their non-assimilation. Using a staggered panel event study design, I show that the introduction of financial aid by the Hungarian government led to a statistically significant 2.35 percentage points increase in the yearly rate of change in the share of Hungarians in the first post-treatment period relative to the pre-treatment period. In subsequent years, the effect diminishes to around one percentage point relative to the baseline. When excluding all infrastructure investments from the analysis, the effect in the first post-treatment period is significant and positive. However, it completely levels off in the following periods. The results could suggest that while Hungarian investments in culture are important, they have to be complemented by adequate investments in infrastructure to ensure that more people identify as Hungarians in Slovakia. The results could have implications not only for Hungarians living in Slovakia and other countries but also for the future of European minority protection programs, as laid down in the relevant international legal documents, such as the International Covenant on Civil and Political Rights or the Copenhagen criteria of the European Union. This research should pave the way for future analyses on the prevention of assimilation of autochthonous ethnic minorities worldwide.

**Keywords:** Minorities, Assimilation, Prevention, Hungary, Financial Aid

**JEL classification:** F59, F68, J15

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# 1 Introduction

According to United Nations estimates, about 10 to 20 percent of the world’s population belongs to ethnic minorities (United Nations Human Rights Office of the High Commissioner, [n.d.](#)). Since these people are especially vulnerable, given their social standing in some countries due to discrimination and injustice, they require protection of their rights. Several international legal documents (both binding and non-binding) aimed at safeguarding the rights of minorities have been passed by international organizations since the 20<sup>th</sup> century, such as the International Covenant on Civil and Political Rights (United Nations, General Assembly, [1966](#)) or the Universal Declaration of Human Rights (United Nations, General Assembly, [1948](#)). The European Convention of Human Rights (Council of Europe, [2013](#)) and the Framework Convention for the Protection of National Minorities (Council of Europe, [1995](#)) represent major legal milestones. Furthermore, any country aspiring to join the European Union must adhere to the Copenhagen criteria, one of which is protecting minority rights (Eur-Lex, [2021](#)).

This paper examines the causal impact of financial aid on the Hungarian minority in Slovakia and its role in preserving their identity. The Hungarian government has actively pursued policies to support its minority populations abroad, particularly in Slovakia, where ethnic Hungarians have experienced a steady demographic decline over the past decades. Despite falling birth rates, the number of Slovaks has increased in the past years, while the number of Hungarians and other minorities has declined. Using a staggered event study design proposed by Clarke and Tapia-Scythe ([2021](#)), this article presents evidence that financial aid from Hungary increases public identification of people as Hungarians in Slovakia. The findings indicate that in the first period after the introduction of financial aid, the yearly rate of change in the share of Hungarians in a district increased by 2.35 percentage points relative to last pre-treatment period. However, this effect diminishes in subsequent years to around a percentage point. In particular, when excluding infrastructure investments, the initial effect remains significant but vanishes later. These findings suggest that cultural investments are crucial, but their long-term effectiveness may depend on complementary infrastructure development.

The decision to split the minority funding into total and non-infrastructure investments stems from the idea that infrastructure investments benefit all district residents, irrespective of ethnicity. Therefore, such investments are investments in public goods. In contrast, non-infrastructure projects are specifically targeted at minority individuals and organizations, as these funds typically support cultural events where the primary audience is the minority community. Naturally, people who identify as Slovaks can still attend cultural events for Hungarians.

Infrastructure investments may be crucial in preserving identity beyond the short term. Unlike cultural programs, which reinforce identity through symbolic and community-driven means, infrastructure projects create long-term structural conditions that facilitate cultural continuity. Schools, cultural centers, and media outlets

funded through infrastructure investments provide lasting spaces where minority identities can be maintained and passed on to future generations. The lack of such investments may explain why the effect of cultural aid alone appears temporary. Future studies should examine how infrastructure interacts with cultural investments in reinforcing ethnic identity.

This analysis includes an examination of official demographic data sourced from the Statistical Office of the Slovak Republic, coupled with a new data set on minority aid projects provided by the Bethlen Gábor Fund (BGA), an entity dedicated to supporting Hungarian culture and patriotism among Hungarians in Slovakia and other countries in the Carpathian basin (Bethlen Gábor Alapkezelő Zrt., [2011/2022](#)).

The results contribute to the broader discourse on minority protection policies and assimilation dynamics. Nguyen and Thanh ([2020](#)) discuss how globalization can threaten cultural identities, leading to a loss of unique cultural expressions and traditions. Hummer ([2023](#)), for example, emphasizes that racism and systemic inequities significantly impact the health outcomes of racial and ethnic minorities in the United States, highlighting the profound effects of societal structures on minority populations.

The findings of this paper imply that financial aid can serve as a short-term catalyst for reinforcing ethnic identity, but sustaining long-term effects may require a holistic approach, incorporating both cultural and infrastructural investments. Future research should explore the role of other socio-political factors, such as education policies and cross-border mobility, in shaping minority identity retention. Furthermore, comparative studies among different minority groups and countries could improve our understanding of the broader applicability of these findings in the European context and beyond.

Alternative explanations for these findings should also be considered. One possibility is that the observed increase in Hungarian identification is not solely driven by financial aid but by other concurrent political or social changes, such as changes in minority rights policies or cross-border mobility between Hungary and Slovakia. Furthermore, self-identification as Hungarian could be influenced by broader nationalistic movements, which could encourage individuals to align more closely with their ethnic heritage regardless of financial support. Future research should aim to disentangle these effects by exploring alternative channels through which ethnic identity is reinforced.

In the subsequent sections, I first provide a literature overview followed by a historical background on Hungarians living in Slovakia and the development of minority rights in Europe, a description of the data sources and methodology employed in the analysis, and a comprehensive examination of the findings and their implications for understanding the dynamics of ethnic composition in Slovakian districts. To the best of my knowledge, this is the first paper to analyze the complex relationship between financial aid to strengthen ethnic identity and regional ethnic composition in which the host does not provide the aid but rather the neighboring country.

## 2 Related Literature

A wide range of literature examines the transformation of minority identities, beginning with Whyte's sociological analysis of Italian immigrants in the United States, documented in the *Street Corner Society* (Whyte, 1993). Despite his intelligence and curiosity, Whyte questioned why Doc, the leader of the street corner gang, chose not to pursue further education. He concluded that this reluctance was rooted in a profound loyalty to his group, where departing would inevitably result in losing status and identity (Whyte, 1993). Building on this foundation, Akerlof (1997) introduced a conformist model where individuals seek to minimize social distance between themselves and others, endeavoring to align as closely as possible with the majority population. Akerlof and Kranton (2000) underscored the significance of identity — ethnic, professional, cultural, or political — in shaping decision-making processes. Their model posits that an individual from a minority group may never fully embody the ideal type of the majority cohort. Some might achieve a degree of integration within the dominant group, but the extent of their success may be limited. The aspiration to closely resemble the majority population by adopting the same core values could be driven by personal motivations, such as enhancing labor market prospects, securing better housing options, or gaining access to superior educational opportunities (Bezin & Moizeau, 2017; Bisin et al., 2016; Kónya, 2005). This is especially important when members of the minority group face significant disadvantages relative to the majority group (Eguia, 2013).

The formation and decline of minority groups have long been a focal point of study in social psychology and political science (Hechter & Okamoto, 2001). Beyond geopolitical factors that might shift national borders, other elements contribute to forming identity groups. Scholars argue that group formation often occurs when there is mutual dependence between individual members or when individuals share similar experiences and treatment (Brown, 1986; Hechter & Okamoto, 2001; Lewin, 1948; Rabbie & Horwitz, 1988; Sherif, 1966). Experimental studies have demonstrated that when randomly assigned to groups and subjected to differing conditions, individuals tend to develop strong identification with their assigned group and make decisions favoring their group members (Hechter & Okamoto, 2001; Luttmer, 2001; Rabbie & Horwitz, 1988). Therefore, some researchers suggest that identity formation can emerge merely through categorization into groups, without differential treatment (Hechter & Okamoto, 2001; Tajfel, 1970).

Identity, especially ethnic identity, can diminish or even disappear over time. Constant et al. (2009) categorize identity loss into four distinct types: integration, assimilation, separation, and marginalization. Assimilation refers to the complete "loss" of ethnic identity, characterized by a strong alignment with the majoritarian society's norms, customs, and values, effectively severing cultural ties to ancestral identity. Integration occurs when an individual from a minority group adheres to local norms and customs while maintaining their ethnic identity. Marginalization is characterized by a strong detachment from both the majority and minority cultures. Finally, separation describes a scenario in which an individual shows no inclination to adapt

to the norms of the majority population — a complete oppositional identity (Bisin et al., 2011; Constant & Zimmermann, 2008; Constant et al., 2009). Preserving or relinquishing one’s identity has always been modeled as a private choice since an identity shift presents a costly endeavor, both in monetary and social terms. Individuals must find a balance between the expected benefits of losing their identity and absorbing the identity of the majoritarian population (Kónya, 2005; Verdier & Zenou, 2017). Kónya (2005) argued that the assimilation of a minority into the dominant population is dependent on the size of the minority in question. He stipulated that for larger minorities, it is better to become bilingual, i.e., to integrate but retain their identity.

Furthermore, smaller minorities would eventually always assimilate, as the benefits of losing their identity would outweigh the potential costs (Kónya, 2005). Contrary to that, Bisin et al. (2011) argue that a minority might preserve its identity regardless of its small size, provided the degree of cultural segmentation, i.e., the absence of the majority’s (cultural) influence is high or if there is a large degree of segregation (Bisin et al., 2011; Janssens, 2015). Similarly, a high prevalence of racist individuals in a society and a high level of harassment could also lead to a more pronounced minority identity (Bisin et al., 2011; Verdier & Zenou, 2017).

Therefore, members of a minority group may choose to retain their ethnic identity, prioritizing it over the potential benefits of assimilation. In this case, the advantages of maintaining their identity outweigh the possible costs of abandoning it (Battu & Zenou, 2010). These costs can be monetary, such as the loss of financial support for minority children in schools, or social, such as losing access to their support network (Eguia, 2013). Individuals should adjust their identity only when the expected benefits exceed any potential negative consequences (Verdier & Zenou, 2017). More recently, Nguyen and Thanh (2020) discuss how globalization can threaten cultural identities, leading to a loss of unique cultural expressions and traditions in Vietnam.

Empirical research on factors contributing to the loss of ethnic identity has examined areas such as employment outcomes, housing, and discrimination. Studies conducted in Sweden and the UK indicate that a more substantial alignment with the majority culture is associated with higher income and employment rates (Battu & Zenou, 2010; Nekby & Rödén, 2007). Immigrants in France who marry a native French person earn between 6 and 8 percent more than their counterparts in endogamous marriages, even when controlling for individual characteristics (Meng & Meurs, 2006). In Germany, a positive correlation has been observed between immigrants’ life satisfaction and their identification with German culture (Angelini et al., 2015). Furthermore, the exclusion of minorities from civic participation and limiting their interaction with the native population has been shown to hinder cultural assimilation within ethnic enclaves in Germany (Danzer & Yaman, 2013). In the United Kingdom, Dustmann and Preston (2001) demonstrated that the presence of unassimilated ethnic enclaves fosters negative attitudes toward minorities. Research by Pendakur and Pendakur (2005) in Canada reveals that a visibly identifiable ethnic identity is linked to lower job quality. Similar findings have been reported in the Netherlands, the United Kingdom, Norway, Germany, and Spain, where equally

qualified minority individuals from culturally distant societies face greater challenges securing employment than their majority counterparts (Veit & Thijsen, 2021). In Denmark, first-generation non-native women with higher degrees of religiosity experience lower employment probabilities compared to native women (Gorinas, 2014). However, to the best of my knowledge, no research to date has examined the relationship between receiving minority aid designed to preserve identity and the actual loss of minority identity in a country.

### 3 Historical Context

The case of Hungary and cross-border Hungarian communities is interesting due to the country's complex geopolitical past. The constitutional obligation to support compatriots living in neighboring countries has been an important driver of Hungarian foreign policy. Moreover, it illustrates the importance of preserving language, culture, tradition, and most importantly, the national identity (Butler, 2007). It is also an integral part of the Hungarian security policy, which does not only encompass military security but also includes economic, cultural, and ecological elements (Johns, 2003). The cultural component is pivotal for Hungarians living in neighboring states and for the Hungarian government. A look at the major geopolitical events of the 19<sup>th</sup> and 20<sup>th</sup> centuries that affected Hungary is necessary to look at the entire picture.

The Kingdom of Hungary (without the autonomous Croatia) had a population of 18.3 million in 1910, about 1.5 million more than in 1900. The Kingdom included Slovakia and covered parts of today's Slovenia, Austria, Ukraine, Serbia, Croatia, and Romania. About 55% of the population were ethnic Hungarians. In relation to the census of 1900, the share of Hungarians rose, whereas that of other nationalities declined. Nevertheless, 10.4% of the population identified as Germans, 10.7% as Slovaks, 16.1% as Romanian, and over 8% stated that they were Ruthenians<sup>1</sup> (Molnár, 1999; Sípós, 1991). The first effort to protect the rights and interests of ethnic minorities in the Kingdom of Hungary came in 1868 with the passing of the *Law Concerning the Equality of Nationalities*. On the one hand, the law established Hungarian as the official state language; on the other hand, an array of liberties were given to using minority languages. Minorities could submit their documents to the relevant offices, bring their cases to court, and have the right to complete their education on all levels in their mother tongue (Kemény, 1952). Hence, the languages of ethnic minorities were not confined to the four walls of one's home. The law abolished any form of discrimination regarding the use of minority languages. However, it did not grant minorities the right to organizational autonomy. Therefore, ethnic tensions persisted in some areas of the country (Molnár, 1999).

After the assassination of Franz Ferdinand, heir-apparent of the Austro-Hungarian

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<sup>1</sup>Since 1843, the name Ruthenians was used to describe ethnic Ukrainians and Rusyns in the Austro-Hungarian Empire (Goodrich, 2022).

Empire, on 14 June 1914 in Sarajevo, the doors opened for yet another war on European soil. The destruction caused by World War I resulted in massive casualties for the Austro-Hungarian Empire. The Kingdom of Hungary contributed about 4 million soldiers to the war effort of the Central Powers. Of those, 661,000 fell in combat, and 1.4 million were either injured or taken prisoner by the victors (Molnár, 1999). The Great War ended on 11 November 1918 with an armistice on the Western front. In the aftermath, the losing Central Powers (German Empire, Austro-Hungarian Empire, Ottoman Empire, and Kingdom of Bulgaria) had signed peace treaties with the winning Entente (France, United Kingdom, Russia (until 1917), USA, Italy, and Japan).

One of the pivotal principles in establishing a post-war Europe was the right of peoples to self-determination. This principle was part of the famous Fourteen Points speech by US President Woodrow Wilson in January 1918, which also promoted ideas of free trade and democracy (Wilson, 1918). The Kingdom of Hungary signed the *Trianon Peace Treaty (TPT)* with the Allied Powers on 4 June 1920 in Trianon Palace in Versailles. This event is to this day considered a national tragedy in the eyes of many Hungarians (Sípos, 1991). As a result of the TPT, the multi-ethnic Austro-Hungarian Empire was disbanded, and Hungary lost its access to the Adriatic Sea, over two-thirds of its pre-war territory, and one-third of its population (Domonkos, 2021; Malloy et al., 1923; Molnár, 1999; Sípos, 1991). In addition, Hungary lost 83% of its crude iron, about 84% of timber, and all of its oil, copper, gold, silver, and salt mines (Teichova, 1985).

The newly created borders of the Kingdom of Hungary were, however, not an expression of the right of self-determination of peoples as promoted by President Woodrow Wilson (Wilson, 1918). This meant that many ethnic Hungarians lived in newly created neighboring countries, such as Czechoslovakia, Romania, and the Serb-Croat-Slovene Kingdom (later Yugoslavia). The new state borders were based on the 1910 census, which resulted in almost 900 thousand native Hungarian speakers living in what is now present-day Slovakia<sup>2</sup>. In total, estimates suggest that between 2.5 and 3 million ethnic Hungarians found themselves in neighboring states after the war (Butler, 2007; Molnár, 1999; Sípos, 1991). Critics of these provisions argued that Hungary was held to a different standard than other nations since the right of self-determination did not seem to be considered in the case of Hungarians outside the newly drawn borders of Hungary (Molnár, 1999). As per Section VI of the TPT, the Kingdom of Hungary was bound to enshrine the protection of its minorities as a fundamental law, meaning that no law or regulation would prevail over them. Former Hungarian subjects, who now found themselves in transferred territories, ipso facto lost their Hungarian nationality and obtained the nationality of the neighboring state (Section VII of TPT) (Malloy et al., 1923; Sípos, 1991). While minority protection legislation under the auspices of the League of Nations after the war was meant to be beneficial, they did not work in practice, as states viewed these regulations as an unlawful intervention in their internal affairs (Sípos,

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<sup>2</sup>Estimates on the actual number of Hungarians in Slovakia in the early 20<sup>th</sup> century vary greatly depending on the source. For more clarification, see the [Appendix](#).

1991).

In the years after the war, political and ethnic tensions remained high. During World War II, Hungary managed to reclaim some territories lost due to TPT by allying itself with Nazi Germany (Molnár, 1999). In the aftermath of World War II, the relationship with Czechoslovakia was strained. Due to fear of collective punishment for being Hungarian, many declared their nationality to be Slovak to avoid potential persecution, which is why the number of Hungarians in Slovakia was almost halved in the 1950 census compared to the one in 1930. The number of Hungarians skyrocketed to over 500,000 in the 1961 census after both Hungary and Czechoslovakia fell under Soviet rule during the Cold War as ethnic tensions were somewhat eased.

Furthermore, this period was characterized by favorable demographic development that led not only to a continuous increase in the number of Hungarians but also in the total increase of population, which lasted until the fall of the Iron Curtain in 1991 (Horbulák & Demeter, 2023). The ethnic composition of districts is illustrated in Figure 1. It shows the share of ethnic Hungarians relative to the total population in 2000. According to the Statistical Office of the Slovak Republic, about 566 thousand Hungarians lived in Slovakia, with the majority concentrated in districts bordering Hungary. In some districts, Hungarians constitute the majority group.

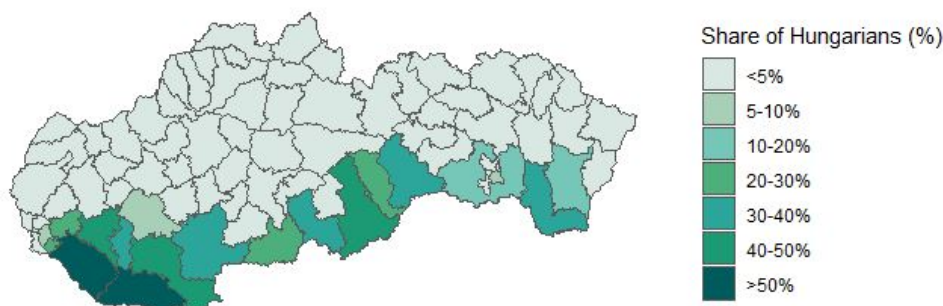


Figure 1: Share of Hungarians in Slovakian districts in 2000

The number of Hungarians in Slovakia steadily declined in the following years. In 2001, the Hungarian parliament under the leadership of Viktor Orbán enacted the *Act on Hungarians Living in Neighboring Countries* (also known as the Status Law) (Butler, 2007; Nemzeti Jogszabálytár, 2001). This legislation served two purposes: first, it aimed to meet the Copenhagen criteria required for EU accession in 2004, and second, it granted ethnic Hungarians in neighboring countries an identity card. This card provided benefits such as the ability to study or work in Hungary, access to discounted public transportation, and subsidized entry to cultural events (Butler, 2007). In 2005, the Status Law was supplemented by the *National Responsibility Program*, which expanded its provisions through five key initiatives:

an economic development program to enable ethnic Hungarians in neighboring countries to remain in their homelands, a visa program (for Hungarians from non-EU states) to facilitate visits to Hungary to preserve their linguistic and cultural heritage, expedited naturalization for ethnic Hungarians, an autonomy program promoting self-governance in line with EU integration principles, and the introduction of a special form of national "citizenship" for ethnic Hungarians, incorporating the aforementioned benefits (Butler, 2007).

In 2011, the Hungarian government created an independent entity named Bethlen Gábor Alap Zrt. (BGA), which distributes financial aid to minority organizations. This move represents the economic development component of the 2005 Status Law. The purpose of this policy was the active prevention of assimilation and an increase in birth rates among ethnic Hungarians (Közigazgatási és Igazságügyi Minisztérium, 2011), especially since the number of Hungarians in Slovakia in 2022 was only about 417 thousand, which is more than 25% lower than in 2000. These ethnic shifts caused changes in the ethnic composition in some districts (see Figure 2). In many, the share of Hungarians was reduced by somewhere between 30 and 10% relative to the year 2000. Although some districts experienced a steep increase, this is due to a low starting share of Hungarians. If their numbers increased even by a small amount, it would result in a substantial increase relative to the base year.

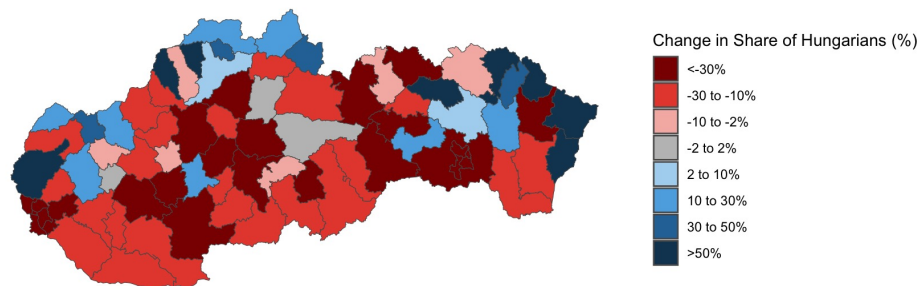


Figure 2: Change in Share of Hungarians in 2022 Relative to 2000

The goal of the Hungarian government is to stabilize the number of Hungarians in Slovakia, prevent assimilation, and foster good relations between the minority and their native country. It is also important to note that the financial aid Hungary distributes to organizations is not directly transferred to citizens.<sup>3</sup>

<sup>3</sup>Minority schoolchildren who study Hungarian as their native language are eligible for a yearly stipend of 215 US dollars, which the Hungarian government distributes. However, these transfers are not subject to analysis.

## 4 Model & Data

To analyze the effect of minority funding on the change in the ethnic composition of Slovak districts, I use a panel event study design with a staggered adoption setup as proposed by Clarke and Tapia-Scythe (2021). This approach allows the beginning of treatment to vary from district to district. It is an extension of the two-way fixed effects model and a generalization of the standard difference-in-differences approach. A notable plus to using the panel event study proposed by Clarke and Tapia-Scythe (2021) is that it allows me to observe the effect's impact across all future periods and not only as a single coefficient. This allows me to account for individual district-level unobservable characteristics and time-variant changes that might otherwise be omitted across several periods after the treatment.<sup>4</sup>

Since I am interested in the connection between financial aid and the overall shifts in ethnic composition over time, the dependent variable  $\Delta Y_{it}$  is the yearly rate of change in the share of Hungarians in a district. The main independent variable of interest is the financial aid received in any given district and year. In addition, I distinguish between the total financial aid and financial aid allocated only for cultural purposes. This allows me to single out the effect that cultural projects have on the change in ethnic composition in each district.

The *Lags* and *Leads* are binary variables that denote periods before ( $j$ ) and after ( $k$ ) receiving aid from the Hungarian government. The period in which a district  $i$  first received financial aid represents the beginning of treatment. The period  $j = 1$  is the last year before a district received aid for the first time.<sup>5</sup> Alternative and mathematically equivalent notations for this empirical strategy can be found in Freyaldenhoven et al. (2019) and Schmidheiny and Siegloch (2023). Please note that the period dummies can be different when analyzing the non-infrastructure projects, as some districts only received funding for culture.

With the above considerations in mind, the regression equation can therefore be written as (1), where  $\Delta Y_{it}$  denotes the yearly rate of change in the share of Hungarians in a district  $i$ .  $X$  is a vector that includes potential control variables. The terms  $\lambda_t$  and  $c_i$  denote the time- and district-fixed effects respectfully.

$$\Delta Y_{it} = \alpha + \sum_{j=2}^J \beta_j (\text{Lag } j)_{it} + \sum_{k=1}^K \beta_k (\text{Lead } k)_{it} + \mu_i + \lambda_t + X_{it}\Gamma + \varepsilon_{it} \quad (1)$$

Leaning on the notation of Clarke and Tapia-Scythe (2021), the binary lags and leads of (1) are defined as follows:

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<sup>4</sup>For a graphical illustration of the parallel trends assumption, see Figure 8.

<sup>5</sup>This is why the coefficient for -1 is omitted in the regression results. See the Results section for more information.

$$(Lag\ j)_{it} = \mathbb{1}[t = Event_i - j] \text{ for } j \in \{1, \dots, J - 1\} \quad (2)$$

$$(Lead\ k)_{it} = \mathbb{1}[t = Event_i + k] \text{ for } k \in \{1, \dots, K - 1\} \quad (3)$$

To analyze the connection between minority aid and the change in a district’s ethnic composition, I utilize a balanced panel dataset using official data from the Statistical Office of the Slovak Republic of all districts at the LAU-1 level every year from 2000 until 2022. In three instances — 2001, 2011, and 2021 — census data is used in which individuals are directly asked about their ethnicity. In the intercensal period, the Statistical Office draws from census data. Then, it updates those data with information on live births, deaths, and migration to determine ethnic composition using official municipal records. In the case of live births, the mother’s nationality is automatically transferred to the child. At the time of a census, the child can choose his preferred nationality. For instance, a child born in a mixed household where the mother is Hungarian would be considered Hungarian at birth. In the next census year, respondents are once again asked about their ethnicity so the child may declare his primary nationality to be Slovak and his or her secondary to be Hungarian. In this case, the child would be counted as a Slovak, not a Hungarian. Hence, larger shifts in ethnic composition may occur every decade for minority groups, as, for instance, the Roma population plummeted by more than 40% according to census data.<sup>6</sup> This may be in part due to allowing a person to have multiple ethnicities but only capturing the *main* one (see [Appendix](#)). This phenomenon may explain the larger shifts in ethnic composition after census years (see [Table 1](#)). However, as illustrated before, minorities may also find it beneficial to report as a majoritarian group to avoid discrimination.

Next, I combine the official demographic statistics from the Slovak Statistical Office with a novel data set on minority-aid projects using Bethlen Gábor Alap Zrt data (or Bethlen Gábor Fund or BGA), an autonomous state-controlled fund established by the Hungarian government to financially support Hungarian communities in neighboring countries in line with the Status Law and the corresponding National Responsibility Program (Butler, [2007](#); Nemzeti Jogszabálytár, [2010](#)). The created organization allows Hungarian organizations abroad to submit grant and sponsorship applications, which are then assessed for eligibility. Once an application is approved, funds are allocated to the applicant. Since its inception in 2011, the fund has provided financial support to various projects benefiting Hungarian minorities in neighboring states. Since its conception, Bethlen Gábor Alap has allocated at least 79.4 million US dollars to Hungarian organizations operating in Slovakia. Districts that received funding in a given year are treated, and once identified as such, a district cannot revert to being untreated.

The dataset on funded projects covers the period from the creation of BGA in 2011 until 2022. It contains a list of projects (partly) funded by the said entity, the amount of money received, and the town/village where the recipient organization resides.

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<sup>6</sup>While the number of Slovaks is also subject to change in the census years, the change is not even nearly as large as for other ethnic minorities.

The projects cover several sectors, from infrastructure to education and culture. In order to assess the regional impact of financed projects, each is assigned to the corresponding district using the organization’s headquarters as a determinant. The dataset from 2011 to 2018 is the work of Sipos (2022) at the investigative newspaper Átlátszó. After 2018, I used the archived reports of BGA to construct the financing dataset for 2019-2022.

Table 1 shows the descriptive statistics of the key variables used in the analysis for all districts and periods. As already discussed, due to census effects causing potentially large shifts in ethnic composition, the variation in the yearly change of Hungarians is high. This effect is further strengthened by some districts with a very small Hungarian population. A Hungarian community that grows from 10 to 19 people in a year has a 90% rate of change. Hence, only districts where the share of Hungarians is at least 5% are included in the analysis.

	Obs.	Mean	SD	Median	Min.	Max.
Yr. Chg. in Share of Hungarians (%)	1738	.117	13.148	0	-72.089	208.917
Log of Total Inv.	201	10.962	1.821	10.734	6.077	16.226
Log of Non-Infrastructure Inv.	182	10.446	1.551	10.397	6.077	14.891
Live Births per 1000	1738	10.212	2.033	9.673	6.348	19.168
Deaths per 1000	1738	10.260	1.966	10.187	4.370	21.711
Total Net Migration per 1000	1738	.154	4.558	-.611	-13.164	36.272
Log of Real Wage	1659	6.598	.400	6.623	5.646	7.562

Table 1: Descriptive Statistics

Similarly, there is considerable variation in the amount of money each district receives for projects. Larger districts with higher concentrations of Hungarians tend to have more Hungarian organizations applying for financial aid, thus receiving more aid (see Figure 2). Another thing to note is that large differences in funding some districts receive can be traced back to large-scale infrastructure investments. While these tend to occur irregularly, cultural events happen regularly. A church, for example, is built only once. Cultural events, however, are not necessarily limited to one-shot large payouts, as is the case with infrastructure. Looking separately at infrastructure and non-infrastructure projects would considerably increase our understanding of funding identity, as identity preservation is partly linked to infrastructure but, perhaps more importantly, to cultural projects.

## 5 Results

While accounting for births, migration, and deaths through district-fixed effects, financial aid aimed at preventing the assimilation of the autochthonous Hungarian

minority in Slovakia should increase the yearly rate of change of Hungarians in districts that received funding. The goal of the money the Hungarian government provides to minority organizations is to increase the number of people identifying as Hungarian. The theory would suggest that a minority only loses its identity when the benefits of doing so outweigh any potential (in)visible costs associated with such a step.

## 5.1 Total Investments

When looking at all investments, the estimates show that more financial aid leads to an increased yearly rate of change of Hungarians in a district after the treatment starts while controlling for district and time-fixed effects, which capture any demographic differences between various districts, such as different mortality or natality rates, migration, and wages. Figure 3 illustrates the results of the event study. Depicted is the estimator proposed by Clarke and Tapia-Scythe (2021). The period in which the treatment occurred is 0, and -1 denotes the last period before treatment. Only districts with at least a share of 5% ethnic Hungarians are analyzed, as these regions are most likely to receive funding due to the size of the minority. The point estimates for periods -5 and 6+ are cumulative estimates for all periods before and after and are therefore shown in a different color.

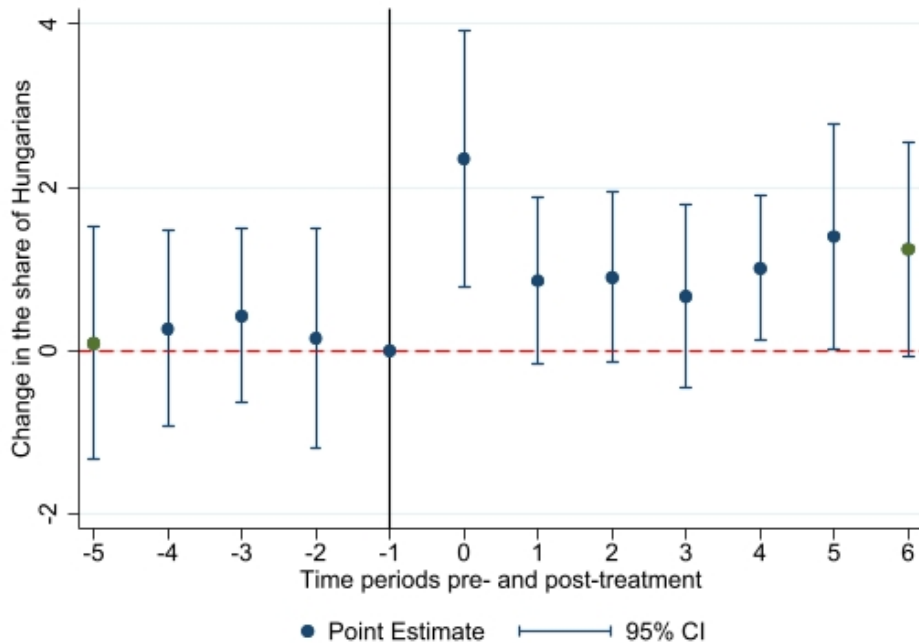


Figure 3: Results for all investments in districts with a share of  $\geq 5\%$  of Hungarians

The policy's most considerable anti-assimilation effect occurs directly after receiving financial aid from the Hungarian government. Immediately after being treated, the

rate of change in the share of Hungarians in a district increases by about two percentage points relative to the pre-treatment period. In subsequent periods, the change relative to the pre-treatment period remains steadily at around one percentage point (for regression results, see the [Appendix](#)). A trend with a steadily increasing rate of change in the share of Hungarians would align with the hypothesis that financial aid curbs the assimilation behavior of the minority even when controlling for live births, migration, and deaths with fixed effects. Since identity takes time to develop and manifest itself fully, the effect is persistently present, as seen in Figure 3, even in the later periods.

## 5.2 Non-Infrastructure Investments

In the subsequent analysis, I eliminate all non-infrastructure investments. This step allows me to assess the pure effect cultural funding has on the yearly change in the share of Hungarians in a district. As shown in Figure 4, a similar effect is visible when looking at the estimation results for cultural investments. In contrast to total investments, the effect seems to be significant only in the first period. The effect dissipates in the subsequent years. Furthermore, when financial aid for infrastructure is excluded from the analysis, the effects become smaller than in the baseline scenario. They are continuously insignificant after the first post-treatment period (see [Appendix](#)).

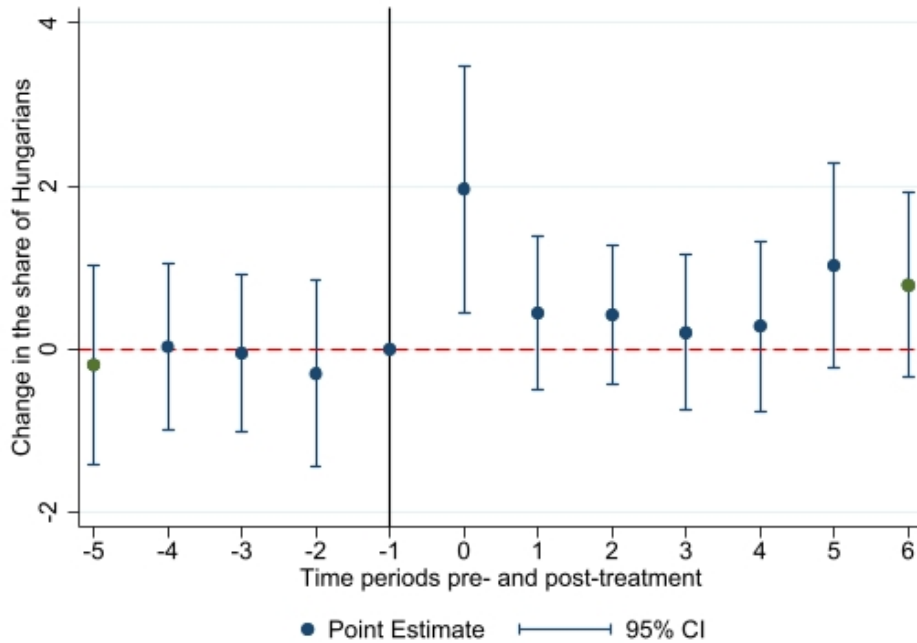


Figure 4: Results for cultural investments in districts with a share of  $\geq 5\%$  of Hungarians

This observation could be explained by the notion that infrastructure investments are crucial to preserving cultural identity. Funding cultural projects without adequate infrastructure might prove challenging, as cultural events cannot unfold their full potential without a proper venue.

### 5.3 Robustness & Inference

The estimator of Clarke and Tapia-Scythe (2021) is further complemented by estimators proposed in Freyaldenhoven et al. (2021) and Sun and Abraham (2021) in order to test the robustness of the impact of financial aid and the non-assimilation of Hungarians in Slovakia. The additional estimators should capture any noise that may be attributed to the initial estimator utilized in the analysis. Figure 5 first captures the results graphically for the total investments. The vertical dashed line denotes the last period before the treatment starts in any district and serves as an observational reference point.

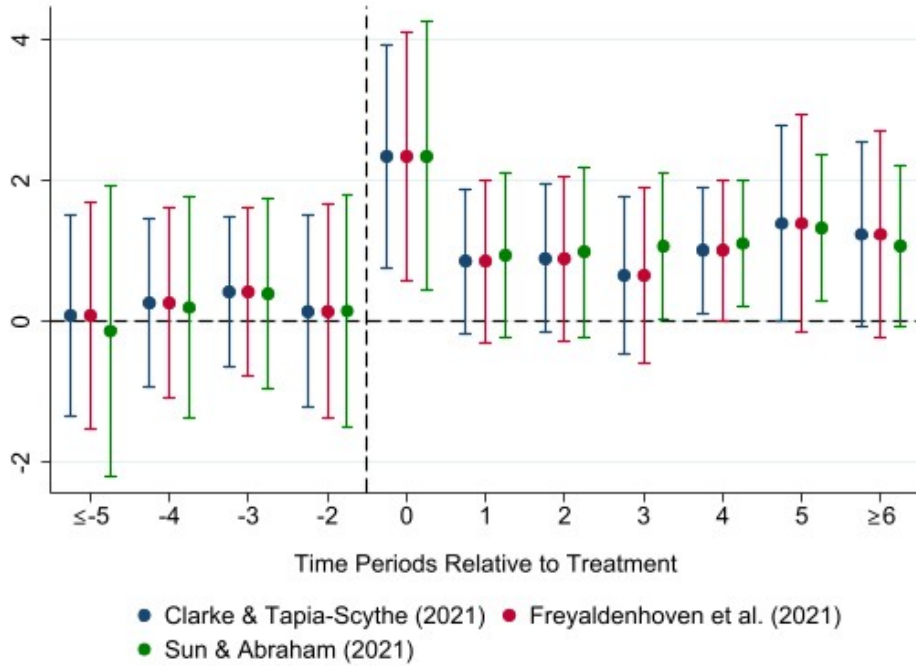


Figure 5: Performance of Different Estimators on the Outcome Variable (Total Investments)

The results of the robustness check signal that the estimates are resilient when using a different estimator. Furthermore, they confirm that an effect is visible from the first post-treatment period and remains consistently present in the subsequent periods. Additionally, this does not change when selecting -2 as a reference period. The closeness of the three estimators could be seen as a positive impact of financial aid on increasing rates of change in the share of Hungarians in treated districts relative

to the baseline period. When excluding infrastructure funds, the new estimators by Freyaldenhoven et al. (2021) and Sun and Abraham (2021) also complement the initial estimations. Figure 6 illustrates how the three behave.

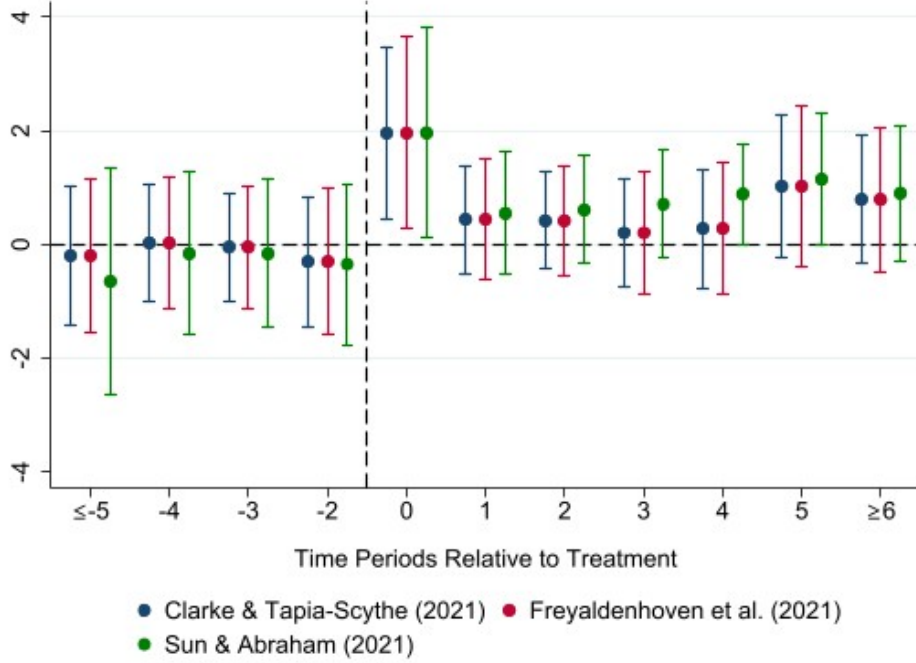


Figure 6: Performance of Different Estimators on the Outcome Variable (Non-Infrastructure Investments)

More detailed results can be found in Tables 4 and 5 in the [Appendix](#), where the closeness of the estimators is further visible. We must test for pre-trends or anticipation effects before treatment starts to assess whether the effect is truly exogenous. Using a Wald test, the test is based on the proposal by Freyaldenhoven et al. (2021) and Freyaldenhoven et al. (2024). When looking at total investments in the Hungarian minority, the null hypothesis on whether all pre-treatment coefficients are jointly equal to 0 is rejected, which points to anticipation effects or an unobserved confounder that could influence the results (see Figure 7). Usually, this poses a problem in causal inference as the event would not be deemed exogenous. However, as the policy is political, anticipation effects could be expected.

Alternatively, an unobservable confounder not captured by the district and time-fixed effects could affect the results. The law on financing Hungarian minorities in neighboring states did not occur randomly and suddenly but was instead the result of negotiations in parliament. Hence, the adoption of a law that would see minorities get funded by their "native country" could be met with anticipatory behavior of minority individuals from the moment a proposal of the law was circulated to the parliament as the media would cover such information. It could be plausible that individuals were more eager to declare themselves as a minority or create minority organizations before the law passed because of the prospect of receiving more funds

in the later periods. An unobservable confounder could be mixed marriages or children who, at birth, are assigned the nationality of the mother but then later switch to the father's nationality or vice versa. Education of schoolchildren in their native language could also play an important role, especially since speaking and writing in their mother tongue could strengthen their identification with Hungary rather than Slovakia.

In the case of limiting the analysis to non-infrastructure investments only, the pre-trends null hypothesis cannot be rejected. For the post-treatment period, using the same method proposed by Freyaldenhoven et al. (2021) and Freyaldenhoven et al. (2024), the null hypothesis of effects leveling off in time cannot be rejected in both cases. Evidence for this is presented in Figure 7.

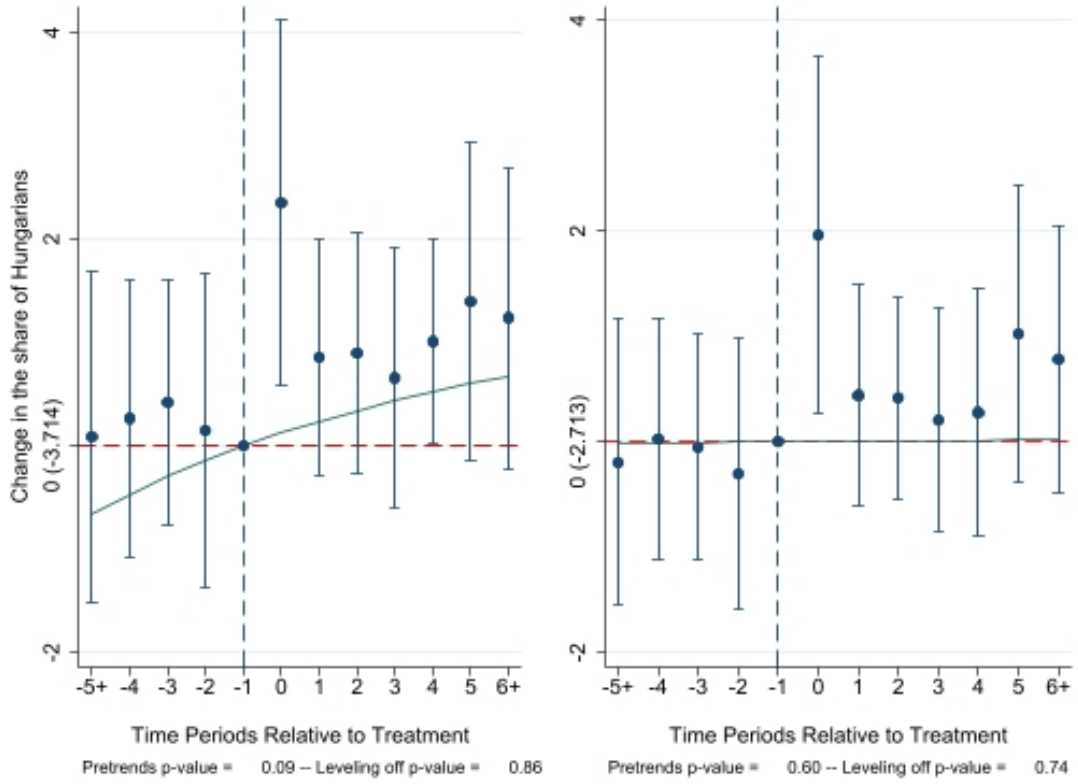


Figure 7: Tests for Pre-Trends for Total Investments and Non-Infrastructure Investments)

Additionally, a devil's advocate model proposed by Freyaldenhoven et al. (2024) can be utilized to check whether the unobserved confound drives all dynamics of the event-time path in the model and thus impacts the outcome. This approach is related to the one introduced by Rambachan and Roth (2023). By calculating a polynomial that lies in the Wald region of the event-time path, we can assess the economic plausibility of a policy's effect on the outcome variable of interest. The higher the order of the polynomial, the less likely it is for the unobserved confound

to explain the policy effect (Freyaldenhoven et al., 2024). Hence, a linear path would mean that the confound could perhaps be able to explain the entire event-time path and that the impact of the policy is limited at best. The results of this calculation are also visible in Figure 7 with the emerald green lines. In the case of non-infrastructure investments (right panel), the degree of the polynomial is one; hence, the trend is entirely linear. This result could point towards an unobserved confound having enough explanatory power to diminish the effect of the policy. The devil’s advocate model algorithm for the left panel determines a third-order polynomial as the least-wiggly path through the Wald region. This result could present evidence that despite pre-trends, the implemented policy may still impact the outcome variable.

## 6 Conclusion

This paper aims to fill the research gap by asking what happens when a state actively tries to prevent the assimilation of its ethnic group living in another country using financial aid. From an individual point of view, losing identity might be preferable, given the standard cost-benefit comparison. Financial aid will, therefore, increase the cost side of the equation.

Using a novel dataset using official statistical records from Slovakia and data on project financing from BGA allowed me to implement an event study design with staggered treatment adoption as proposed by Clarke and Tapia-Scythe (2021). The analysis presents the first causal evidence of a relationship indicating that more financial aid results in an increase in the share of Hungarians in Slovak districts where their concentration is sufficiently high relative to the pre-treatment period. The results remained robust even after utilizing other estimators proposed in the literature, such as Freyaldenhoven et al. (2021) or Sun and Abraham (2021). Although pre-trends, which could violate the assumption of the policy being exogenous, were observed in the case of total investments, they could plausibly be explained by financial aid being announced before the law was passed in parliament. A new policy is hardly ever a complete exogenous shock but rather the result of tedious prior negotiations and debates in politics and the mainstream media. To account for this, the devil’s advocate model showed that a confounder possibly explaining the entire event-time path in the case of total investments tends to be unlikely, as the calculated polynomial from the Wald region is of the third order and not linear (Freyaldenhoven et al., 2024).

In the case of pure cultural investments, empirical evidence suggesting a positive relationship between cultural financial aid and an increased share of Hungarians in a district remains statistically significant only in the first post-treatment period. Afterward, the effect vanishes and remains insignificant until the end of the observation period. While pre-trends are not visible in this analysis, the calculated polynomial through the Wald region suggests a weak linear relationship, likely point-

ing toward an unobserved confounder not captured by the data. The exact nature of this confounder remains unknown and should be subject to future research.

While this work aims to provide a new point of view when researching the assimilation behavior of minorities by adding another factor to the individual decision-making process, the approach possesses some limitations. Firstly, it is difficult to capture the real assimilation behavior since official statistics are often unable to capture the complex mechanisms in the background adequately. Secondly, suppose the entity responsible for distributing financial aid to minority organizations undergoes structural changes or the funding is redirected through other governmental agencies. In that case, these shifts remain unobservable in the data. Consequently, this could lead to an underestimation of the actual impact of financial aid on mitigating assimilation, as some districts might be considered untreated despite receiving funds through another agency. Hence, future research with more comprehensive data on minority funding on an international level would be necessary to estimate the effect in other countries, thus allowing for an international comparison. In the context of Hungary, future research on this topic could expand the analysis by including Hungarian minorities in neighboring countries, such as Romania or Serbia, to see whether the positive impact of financial aid on the increased share of Hungarians in a district still holds. In the international context, such analyses could provide valuable insight into how assimilation functions.

## References

- Akerlof, G. A. (1997). Social Distance and Social Decisions. *Econometrica*, 65(5), 1005–1027. <https://doi.org/10.2307/2171877>
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and Identity. *The Quarterly Journal of Economics*, 115(3), 715–753. <http://www.jstor.org/stable/2586894>
- Angelini, V., Casi, L., & Corazzini, L. (2015). Life satisfaction of immigrants: Does cultural assimilation matter? *Journal of Population Economics*, 28, 817–844. <https://doi.org/10.1007/s00148-015-0552-1>
- Battu, H., & Zenou, Y. (2010). Oppositional Identities And Employment For Ethnic Minorities: Evidence from England. *The Economic Journal*, 120(120), F52–F71. <https://doi.org/10.1111/j.1468-0297.2009.02337.x>
- Bethlen Gábor Alapkezelő Zrt. (2011/2022). *Külhoni támogatások*. Retrieved June 11, 2024, from <https://bgazrt.hu/tamogatasok/kulhoni-tamogatasok/>
- Bezin, E., & Moizeau, F. (2017). Cultural dynamics, social mobility and urban segregation. *Journal of Urban Economics*, 99, 173–187. <https://doi.org/10.1016/j.jue.2017.02.004>
- Bisin, A., Patacchini, E., Verdier, T., & Zenou, Y. (2011). Formation and persistence of oppositional identities. *European Economic Review*, 55(8), 1046–1071. <https://doi.org/10.1016/j.euroecorev.2011.04.009>
- Bisin, A., Patacchini, E., Verdier, T., & Zenou, Y. (2016). Bend it like Beckham: Ethnic identity and integration. *European Economic Review*, 90, 146–164. <https://doi.org/10.1016/j.euroecorev.2016.01.006>
- Brown, R. (1986). *Social Psychology: The Second Edition*. Free Press.
- Butler, E. (2007). Hungary and the European Union: The political implications of societal security promotion. *Europe-Asia Studies*, 59(7), 1115–1144. <https://www.jstor.org/stable/20451431>
- Clarke, D., & Tapia-Scythe, K. (2021). Implementing the Panel Event Study. *The Stata Journal*, 21(4), 853–884. <https://doi.org/10.1177/1536867X211063144>
- Constant, A. F., Gataullina, L., & Zimmermann, K. F. (2009). Ethnosing immigrants. *Journal of Economic Behavior & Organization*, 69(3), 274–287. <https://doi.org/10.1016/j.jebo.2008.10.005>
- Constant, A. F., & Zimmermann, K. F. (2008). Measuring ethnic identity and its impact on economic behavior. *Journal of European Economic Association*, 6(2/3), 424–433. <https://www.jstor.org/stable/40282652>
- Council of Europe. (1995). *Framework Convention for the Protection of National Minorities and Explanatory Report*.
- Council of Europe. (2013). *European Convention on Human Rights*.
- Danzer, A. M., & Yaman, F. (2013). Do ethnic enclaves impede immigrants' integration? Evidence from a quasi-experimental social-interaction approach. *Review of International Economics*, 21(2), 311–325. <https://doi.org/10.1111/roie.12038>
- Domonkos, E. (2021). Economic Stabilization after the Treaty of Trianon: Challenges and Possibilities. *Acta Universitatis Sapientiae European and Regional Studies*, 19(1), 55–71. <http://dx.doi.org/10.2478/auseur-2021-0004>

- Dustmann, C., & Preston, I. (2001). Attitudes to Ethnic Minorities, Ethnic Context and Location Decisions. *The Economic Journal*, 111(470), 353–373. <https://doi.org/10.1111/1468-0297.00611>
- Eguia, J. X. (2013). Discrimination and Assimilation. *SSRN*. <https://dx.doi.org/10.2139/ssrn.1657144>
- Eur-Lex. (2021). *Accession Criteria (Copenhagen Criteria)*.
- Freyaldenhoven, S., Hansen, C., J., P. P., & Shapiro, J. M. (2021). Visualization, Identification, and Estimation in the Linear Panel Event-Study Design. *NBER Working Paper Series No. 29170*. <http://www.nber.org/papers/w29170>
- Freyaldenhoven, S., Hansen, C., J., P. P., Shapiro, J. M., & Carreto, C. (2024). Xtevent: Estimation and Visualization in the Linear Panel Event-Study Design. *FRB of Philadelphia Working Paper No. 24-15*. <https://dx.doi.org/10.21799/frbp.wp.2024.15>
- Freyaldenhoven, S., Hansen, C., & Shapiro, J. M. (2019). Pre-event Trends in the Panel Event-Study Design. *American Economic Review*, 109(4), 3307–3338. <http://www.aeaweb.org/articles?id=10.1257/aer.20180609>
- Goodrich, R. (2022). Habsburg Ruthenian/Rusyn Identities Part I: The Habsburg Lands. *Upper Country: A Journal of the Lake Superior Region*, 10(1). [https://commons.nmu.edu/upper\\_country/vol10/iss1/3](https://commons.nmu.edu/upper_country/vol10/iss1/3)
- Gorinas, C. (2014). Ethnic identity, majority norms, and the native-immigrant employment gap. *Journal of Population Economics*, 27, 225–250. <https://doi.org/10.1007/s00148-012-0463-3>
- Hechter, M., & Okamoto, D. (2001). Political Consequences of Minority Group Formation. *Annual Review of Political Science*, 4, 189–215. <https://doi.org/10.1146/annurev.polisci.4.1.189>
- Horbulák, Z., & Demeter, G. (2023). A szlovákiai magyar közösség létszáma és területi mintázata a 2021. évi népszámlálás alapján. *Területi Statisztika*, 63(2), 207–233. <https://doi.org/10.15196/TS630204>
- Hummer, A. R. (2023). Race and Ethnicity, Racism, and Population Health in the United States: The Straightforward, the Complex, Innovations, and the Future. *Demography*, 60(3), 633–657. <https://doi.org/10.1215/00703370-10747542>
- Janssens, R. (2015). Segregation or Assimilation: Dutch Government Research on Ethnic Minorities in Dutch Cities and its American Frames of Reference. *European Journal of American Studies*, 10(3). <https://doi.org/10.4000/ejas.11271>
- Johns, M. (2003). "Do As I Say, Not As I Do": The European Union, Eastern Europe and Minority Rights. *East European Politics and Societies and Cultures*, 17(4), 682–699. <https://doi.org/10.1177/0888325403258291>
- Kemény, G. G. (1952). *Iratok a nemzetiségi kérdés történetéhez Magyarországon a dualizmus korában* (Vol. I: 1867-1892). Tankönyvkiadó, Budapest.
- Kocsis, K., & Kocsis-Hodosi, E. (1998). *Ethnic Geography of the Hungarian Minorities in the Carpathian Basin*. Geographical Research Institute Research Centre for Earth Sciences & Hungarian Academy of Sciences.

- Kónya, I. (2005). Minorities and Majorities: A Dynamic Model of Assimilation. *The Canadian Journal of Economics*, 38(4), 1431–1452. <https://www.jstor.org/stable/3696090>
- Közigazgatási és Igazságügyi Minisztérium. (2011). *Magyar nemzetpolitika: A nemzetpolitikai stratégia kerete*.
- Lewin, K. (1948). *Resolving Social Conflicts: Selected Papers on Group Dynamics*. Harper.
- Luttmer, E. F. P. (2001). Group Loyalty and the Taste for Redistribution. *Journal of Political Economy*, 109(3), 500–528. <https://doi.org/10.1086/321019>
- Malloy, W. M., Charles, G., Myers, D. P., Redmond, C. F., & Trenwith, E. J. (1923). In *Treaties, conventions, international acts, protocols, and agreements between the United States of America and other powers. Vol. 3. Treaty of Peace between The Allied And The Associated Powers And Hungary (Signed At Trianon, June 4, 1920)* (pp. 3541–3697, Vol. 3). U.S. Govt. print. office.
- Meng, X., & Meurs, D. (2006). Intermarriage, Language, and Economic Assimilation Process: A Case Study of France. *IZA Discussion Paper Series No. 2461*. <https://nbn-resolving.de/urn:nbn:de:101:1-20080516188%0A>
- Molnár, M. (1999). *Geschichte Ungarns: Von den Anfängen bis zur Gegenwart*. Krämer.
- Nekby, L., & Rödin, M. (2007). Acculturation Identity and Labor Market Outcomes. *Research Papers in Economics, Stockholm University*, 4(7).
- Nemzeti Jogszabálytár. (2001). *2001. évi LXII. törvény a szomszédos államokban élő magyarokról*.
- Nemzeti Jogszabálytár. (2010). *2010. évi CLXXXII. törvény a Bethlen Gábor Alapról*.
- Nguyen, T. T. T., & Thanh, H. D. (2020). Vietnamese Cultural Identity in the Face of Cultural Globalization. *Future Human Image*, 14, 28–35. <https://doi.org/10.29202/fhi/14/4>
- Pendakur, K., & Pendakur, M. (2005). Ethnic identity and the labour market. *Working Paper Series: Vancouver Centre of Excellence. Research on Immigration and Integration in the Metropolis*. <https://api.semanticscholar.org/CorpusID:10134133>
- Rabbie, J. M., & Horwitz, M. (1988). Categories versus groups as explanatory concepts in intergroup relations. *European Journal of Social Psychology*, 18(2), 117–123. <https://doi.org/10.1002/ejsp.2420180204>
- Rambachan, A., & Roth, J. (2023). A More Credible Approach to Parallel Trends. *Review of Economic Studies*, 90, 2555–2591. <https://doi.org/10.1093/restud/rdad018>
- Schmidheiny, K., & Siegloch, S. (2023). On event studies and distributed-lags in two-way fixed effects models: Identification, equivalence, and generalization. *Journal of Applied Econometrics*, 38, 695–713. <https://doi.org/10.1002/jae.2971>
- Sherif, M. (1966). In *Common Predicament: Social Psychology of Intergroup Conflict and Cooperation*. Houghton Mifflin.
- Sipos, Z. (2022). *Hungarian government pours money into football, churches and schools abroad*. Retrieved November 12, 2024, from <https://english.atlatszo>.

- [hu/2019/02/21/hungarian-government-pours-money-into-football-churches-and-schools-abroad/](https://hu/2019/02/21/hungarian-government-pours-money-into-football-churches-and-schools-abroad/)
- Sípos, P. (1991). National conflicts and the democratic alternative in the Austro-Hungarian Monarchy and its successors. In *State and nation in multi-ethnic societies: The breakup of multinational states* (pp. 98–112). Manchester University Press.
- Šprocha, B., & Tišliar, P. (2022). The Post-War Population Census in Slovakia in 1919. *Demografie*, 64(3), 242–258. <https://doi.org/10.54694/dem.0300>
- Statistical Office of the Slovak Republic. (2021). *Number of population by ethnicity in the slovak republic in 1921 - 2021*.
- Sun, L., & Abraham, S. (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, 225(2), 175–199. <https://doi.org/10.1016/j.jeconom.2020.09.006>
- Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, 223(5), 96–103. <https://www.jstor.org/stable/24927662>
- Teichova, A. (1985). Industry. In *The Economic History of Eastern Europe 1919–1975. Vol. I. Economic Structure and Performance between the Two Wars* (pp. 222–323). Clarendon Press.
- United Nations, General Assembly. (1948). *Universal Declaration of Human Rights*.
- United Nations, General Assembly. (1966). *International Covenant on Civil and Political Rights (ICCPR)*.
- United Nations Human Rights Office of the High Commissioner. (n.d.). *United Nations Guide for Minorities*.
- Veit, S., & Thijsen, L. (2021). Almost identical but still treated differently: Hiring discrimination against foreign-born and domestic-born minorities. *Journal of Ethnic and Migration Studies*, 47(6), 1285–1304. <https://doi.org/10.1080/1369183X.2019.1622825>
- Verdier, T., & Zenou, Y. (2017). The role of social networks in cultural assimilation. *Journal of Urban Economics*, 97, 15–39. <https://doi.org/10.1016/j.jue.2016.11.004>
- Whyte, W. F. (1993). *Street corner society: The social structure of an Italian slum* (4th ed.). University of Chicago Press.
- Wilson, W. (1918). *President Woodrow Wilson's Fourteen Points*.

## Appendix

Year	Šprocha & Tišliar (2022)	Horbulák & Demeter (2023)	Kocsis & Kocsis-Hodosi (1998)	Statistical Office of the Slovak Republic (2021)
1910	896,338	/	881,326	/
1921	650,597	657,646	650,597	650,597
1930	/	603,764	585,434	585,434

Table 2: Different Estimates on the Historic Number of Hungarians Living in Slovakia in the Early 20<sup>th</sup> Century

Year	Hungarians	Slovaks	Roma	Ruthenians/Rusyns
2022	416,630	4,577,726	67,106	21,898
2021	419,000	4,572,981	67,235	22,781
2020	447,932	4,461,531	113,371	29,198
2019	450,122	4,455,612	112,702	29,701
2018	451,914	4,444,758	111,889	30,153
2017	453,565	4,433,573	111,089	30,603
2016	454,912	4,421,538	110,261	31,081
2015	455,744	4,408,649	109,600	31,500
2014	456,991	4,399,406	108,881	31,939
2013	458,038	4,388,234	107,915	32,344
2012	458,091	4,360,313	107,958	33,439
2011	458,370	4,357,322	106,583	33,447
2010	513,146	4,630,419	107,210	23,972

Table 3: Ethnic Composition in the Slovak Republic 2010-2022 (Selected Ethnic Groups)

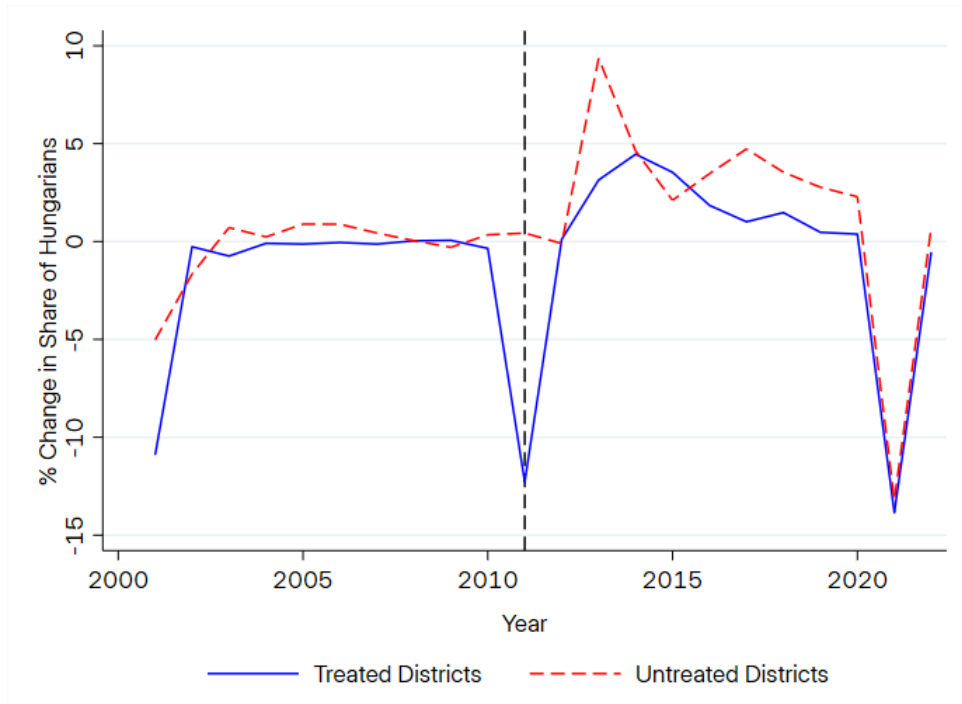


Figure 8: Parallel Trends Between Treated and Control Group

Figure 8 shows the assumption of parallel trends for the dependent variable. Before the rollout of treatment starts in 2011, both the treatment and control groups follow a similar path of development. Once treatment for some districts begins in 2011, we see a large difference between both groups. This is in part the result of a statistical mechanical process since 2011 and 2021 are census years, and larger ethnic shifts occur especially in predominantly treated districts.

	(1) Base	(2) Freyaldenhoven et al. (2021)	(3) Sun & Abraham (2021)
-5 & prior	0.0902 (0.13)	0.0902 (0.11)	-0.134 (-0.13)
-4	0.265 (0.44)	0.265 (0.39)	0.203 (0.26)
-3	0.423 (0.79)	0.423 (0.71)	0.396 (0.58)
-2	0.149 (0.22)	0.149 (0.20)	0.152 (0.18)
-1	. (.)	. (.)	. (.)
0	2.349*** (2.96)	2.349*** (2.65)	2.346** (2.45)
1	0.857 (1.66)	0.857 (1.48)	0.943 (1.59)
2	0.897* (1.71)	0.897 (1.53)	0.992 (1.64)
3	0.658 (1.17)	0.658 (1.04)	1.070** (2.05)
4	1.009** (2.26)	1.009** (2.02)	1.110** (2.44)
5	1.396** (2.02)	1.396* (1.80)	1.328** (2.54)
6 & later	1.240* (1.89)	1.240* (1.69)	1.078* (1.89)
$N$	422	422	275
$R^2$	0.854	0.884	0.937

$t$  statistics in parentheses

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4: Regression Coefficients from Different Estimators (Total Investments)

	(1)	(2)	(3)
	Base	Freyaldenhoven et al. (2021)	Sun & Abraham (2021)
-5 & prior	-0.196 (-0.32)	-0.196 (-0.29)	-0.651 (-0.65)
-4	0.0279 (0.05)	0.0279 (0.05)	-0.154 (-0.22)
-3	-0.0499 (-0.10)	-0.0499 (-0.09)	-0.157 (-0.24)
-2	-0.305 (-0.53)	-0.305 (-0.47)	-0.346 (-0.49)
Treatment start (-1)	. (.)	. (.)	. (.)
0	1.961** (2.58)	1.961** (2.31)	1.967** (2.13)
1	0.441 (0.93)	0.441 (0.83)	0.551 (1.02)
2	0.420 (0.98)	0.420 (0.87)	0.607 (1.28)
3	0.203 (0.43)	0.203 (0.38)	0.710 (1.50)
4	0.280 (0.53)	0.280 (0.48)	0.880* (1.98)
5	1.024 (1.62)	1.024 (1.45)	1.143* (1.96)
6 & later	0.787 (1.39)	0.787 (1.24)	0.906 (1.52)
$N$	422	422	275
$R^2$	0.854	0.884	0.936

$t$  statistics in parentheses

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 5: Regression Coefficients from Different Estimators (Non-Infrastructure Investments)