Implications of the 14th IMF General Quota Reform on Fund Members' Program Participation and Characteristics

by

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In partial fulfilment of the requirements for the Degree of Master of Arts in Economic Policy in Global Markets

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Vienna, Austria 2021

Acknowledgements

I would like to thank my supervisor, Cristina Corduneanu-Huci for her support and competence throughout my research process. Her insights and ideas proved to be extremely valuable.

I am grateful for the assistance of Balázs Sziklai who let me discover an other slice of this field during my Bachelor's thesis research process. My constant enthusiasm for the topic led me to this specific research niche, which I have found particularly intriguing to investigate.

Many thanks to my lieber David who supported me in all the ways he could, through long working hours and long talks about my struggles and findings. The same goes for my family, friends and my dear colleagues, from whom I enjoyed eternal support. Dear Akhi, I hope we meet someday soon again and will be able to celebrate our joyful graduation in person!

Abstract

Since the beginning of the 1990's social scientists, economists, International Relations academics came up with different theories discovering factors that determine IMF Program participation, loan sizes and conditionality, beyond the conventional measures articulated by the Fund. The current study aims to fill a niche in the literature by studying the effect of China's emerging role in the Fund on IMF Program participation outcomes, loan size and word/sentence counts of IMF programs documents referring to member countries. Its additional purpose is to estimate the effects of the most comprehensive Fund reform in the current century, the 14th General Quota Reform on the same outcomes.

I compiled a unique data set on recent yearly data, consisting of economic and political variables aligned with the major hypotheses in the literature, in order to test my main research questions. It covers the period of 2011 and 2019 and includes 2038 country-year pair observations. Cross-section models utilized the cross-section data by running logit and Poisson regressions in separate specifications. After that, in order to infer the effects of the quota changes during the Quota Reform, I estimated different Diff-in-diff models.

This paper poses three primary recommendations. First, providing China with larger influence subsequently leads to larger independence in its actions. Carefully evaluating this could be a potentially important step from the Fund. Second, quota share alignment may follow for additional emerging economies as well in the future, based on changes in the World economy. The case of China may create a precedent for further emerging countries and a basis for potential negotiations. Being transparent and consequent about Fund policies is crucial in preparing for potential internal and interest conflicts. Third, parallel to liberalization in the World economy, the Fund's lender of last resort role might need to be adjusted. One step towards this might need to be the re-evaluation of demand for the types of financing.

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Introduction

Key questions of development economics nowadays is how aid could and should be allocated optimally, and what roles do multilateral organizations have in combating global inequalities among countries. There are no definite answers to none of these questions and ongoing discussion still leaves space for filling in gaps. The International Monetary Fund (IMF), being one of the longstanding multilateral institutions, has gone through several transformations and crises and has most of the world's countries in its membership. For several decades, it has been an important, though controversial player in the field of economic development.

Since the beginning of the 1990's social scientists, economists, International Relations academics came up with different theories discovering factors that determine IMF Program participation, loan sizes and conditionality, beyond the conventional measures articulated by the Fund. Conditionality has been a rigorous and infamous toolkit of the Fund, which is a set of conditions imposed when a member country borrows from the Fund. In order to fulfil these conditions, borrowers often face strict measures and extensive macro policy adjustments.

Theories on major determinants include the hegemony of Western democracies in the governance of the IMF, attributing a special role to the United States. Empirical research investigated direct and indirect channels for this group of members to individually exert influence on program and funding outcomes (Barro and Lee, 2005; Sturm, Berger and Haan, 2005; Dreher, Sturm and Vreeland, 2007; Copelovitch, 2010; Milner and Tingley, 2013; Moser and Sturm, 2011). Moser and Sturm, 2011; Dreher and Jensen, 2007; Milner and Tingley, 2013 sketch the idea of the Fund exhibiting a large-scale principal-agent problem in which: (i) large member countries take the role of principals, while the Fund as an institution is the agent, corresponding to their interests, (ii) the Fund as an institution is the principal (governed along interests of the members), and staff is the agent. Rent-seeking behaviour of the staff is assumed in order to increase their autonomy, project budgets and maximize the success rate of projects. Copelovitch, 2010 extends this framework by blending ideas together, arguing that interests of the G5 are often interacting with each other, are not independent from each other, and considers the principal-agent theory, involving staff, which makes outcomes even more diverse. Gould, 2003 builds upon the idea that conditions set during IMF Programs are subject to the interests of external financing partners of the IMF, which are providing part of the funds. A set of political variables, such as quality of democracy, lagged legislative elections, government qualities, etc., and positions in institutions of strategic importance (e.g. temporary membership in the UN Security Council) proved to have significant effects, too (Dreher and Jensen, 2007; Stone, 2008; Oberdabernig, 2018; Barro and Lee, 2005; Sturm, Berger and Haan, 2005; Barro and Lee, 2005; Dreher, Sturm and Vreeland, 2007; Copelovitch, 2010; Milner and Tingley, 2013; Moser and Sturm, 2011; Oberdabernig, 2018; Thacker, 1999; Sturm, Dreher and Vreeland, 2013). Moreover, existing ties to the Fund, measured as participation in recent programs has also been studies extensively (Moser and Sturm, 2011; Copelovitch, 2010).

I conclude that none of these theories are completely and solely true and each has its own limitations. Moreover, I attempt to fill a niche in the literature by adding an additional theoretical element by studying the effect of China's emerging role in the Fund. It has improved its position during the 14th General Quota Reform (came into effect in 2016) from the 6th to the 3rd place in terms of its quota shares. Quotas are the own tool of the Fund to model the relative economic size and importance of its members based on their roles in the World economy.

RQ1: What role does China play in IMF funding allocation and its characteristics? As mentioned earlier, to the best of my knowledge, China's potential influence on IMF funding decisions has not been investigated in the literature. Its significant improvement in its relative position provided it with additional privileges. Its perceived increase in influence and lack of previous studies made it worth to investigate its role, partly based on the example of US influence tests.

RQ2: How does the 14th General Quota Reform affect IMF Program participation, average loan size and length of IMF Program documents? This comprehensive reform came along with large changes in the overall amount of quotas, and in the distribution of quota shares, being one of the largest reforms in the Fund in the 21st century. China has gained its larger quota share in this reform as well. Changes in the composition of quota shares is expected to subsequently lead to a change in the composition of funding.

I compiled a unique data set on recent yearly data, consisting of variables referring to the major hypotheses in the literature, in order to test my main research questions , . It covers the period of 2011 and 2019 and includes 2038 country-year pairs as observations. The first two dependent variables were a binary variable for program participation, average yearly loan size conditional on taking on a loan. The third set of outcomes included the sum word counts and sentence counts of IMF Program reports on each participating member per year. These measures were sourced from a unique dataset, including all IMF country documents by types from multiple decades in a scraped version. Independent variables were quota size, basic economic determinants (referring to income, debt situation, access to international markets, etc.) and political variables. Controls were average years of participation in a 5-year window, and population.

I first utilized the cross-section data by running OLS regressions in separate models on the dependent variables. First I estimate a logit model predicting IMF Program participation, with different specifications. After that I utilize Poisson models for estimating the average effects of explanatory variables on loan size and word/sentence counts. Due to requirements of the Poisson model I am not able to utilize the log transformed versions of these outcome variables.

After evaluating the explanatory power of the selected explanatory variables, along with the general role of quota shares in funding outcomes, I use changes in quota shares to infer the effects of the quota changes during the 14th Quota Reform. In order to conduct the Difference-in-Differences analysis, first matching was needed.

Findings of the analysis do not underpin the significance of explanatory variables on chances for program participation, except in the case of previous history with the Fund. However, I find statistically significant effects of quota shares, economic and political variables on all second-stage outcomes (loan size, word/sentence counts), both in the OLS and the DiD models. In addition, the effect of the quota reform proved to be significant on loan size and word/sentence counts, lowering them for those affected by the quota share changes.

The proposed structure of this paper is the following. First, I provide an overview on the framework that this thesis is focusing on, on the specific characteristics of IMF as an institution and its instruments. Chapter 2 informs about the links to IMF program participation, and funding characteristics, putting the first, descriptive chapter more into context. This is also to provide a strong basis for the methodology part, which follows in Chapter 3. This chapter outlines the econometric consideration behind the identification strategy of this paper and outlines the data and itc components. Chapter 4 presents and interprets the findings of the different models, which is extended and utilized in the Discussion, in Chapter 5. Finally, the Conclusion part (Chapter 6) provides a summary on this paper, highlights some limitations and denotes the importance of the current research.

Chapter 1 Literature review

The International Monetary Fund is one of the Bretton Woods institutions created in 1945 as part of the reconstruction process after World War II. Being a multilateral organisation, it currently counts 190 member countries. Its main aim is to coordinate and support its member countries' international monetary activities therefore sustaining macroeconomic stability, creating wealth and promote cooperation (International Monetary Fund, 2021a). In practice, the Fund operates as an international lender of last resort, providing financing to its member countries. Despite this common categorization, it cannot be considered a lender of last resort, though. It is not allowed to print its currency, moreover, its loans do not qualify for the traditional classification from Walter Bagehot (Copelovitch, 2010; Walter Bagehot, 2021).

In terms of structure, the Fund comprises of several committees representing its member countries, as well as employs professional staff who are participating in research, evaluation and program implementation while providing reports to the management and the Fund's stakeholders (International Monetary Fund, 2021a; D. Leech, 2002). The two main decision-making bodies are the Board of Governors, with one members from each member state, and the Executive Board, with 24 members. The former is responsible for crucial and fundamental decisions, while the latter is focusing more on issues of more operational nature. However, the Board is allowed to delegate to the Executive Board, therefore its role is more supervisory than proactive (D. Leech, 2002).

The Fund relies in its operations firmly on its quota system.

1.1 IMF quota system

Each member state is assigned a certain number of quotas based on its relative economic parameters to other member countries (D. Leech and R. Leech, 2013). Quotas are key operational elements, determining the distribution of political power among the members, setting individual targets for borrowing and contributing to the Fund.

1.1.1 Special Drawing Rights

Quotas are denominated in Special Drawing Rights (SDR), a currency basket specifically used by the Fund. The asset was created in 1969 with the aim of storing the members' funds in a form of a common, virtual currency (International Monetary Fund, 2021j). As it is only a unit of account, it cannot be considered a real currency but a claim for the currencies used by the IMF. SDRs are freely interchangeable to any of the 39 officially used currencies of the IMF. A Special Drawing Right is a basket of currencies, consisting of the five, globally most freely tradable and widely used currencies in export transactions (International Monetary Fund, 2021i).

Table 1.1 demonstrates the composition of an SDR in terms of weights of elements and fractions of each currency that altogether add up to one SDR.

Currency	Weights of currencies	Fixed number of units of currency
U.S. Dollar	41.73	0.58252
Euro	30.93	0.38671
Chinese Yuan	10.92	1.01740
Japanese Yen	8.33	11.9000
Pound Sterling	8.09	0.085946

Table 1.1: Composition of a Special Drawing Right

1.1.2 Roles of quotas

Based on International Monetary Fund, 2021d and International Monetary Fund, 2021g, quotas play four key roles in the institution.

First, they determine up to how much member states are supposed to contribute to the Fund as deposits when joining the Fund. 25% of the overall expected sum is to be paid in one of the basket currencies of the SDRs, and the rest is paid in the own currency of the country.

Second, quotas are useful at determining the maximum amount of available lending from the institution for a country. In case of Stand-by and Extended credit types this threshold is set to be 145% of the member's quota yearly and may account for 435% when counting in all borrowings a country took from the Fund. This silver lines can only be exceeded in exceptional and specific cases.

Third, a crucial function of the quota system: quotas determine voting shares of member countries. Currently, first, each member receives an equal number of basic votes (accounting for approximately 5% of all SDRs). After that, each member is given one vote per 100,000 SDRs, the remaining 95% of SDRs are allocated this way. Lastly, the distribution of quotas determine the quotas of newcomers as well: new members of the Fund are supposed to receive approximately as many quotas as existing members of comparable economic integration, development stage and population.

1.1.3 The Quota Formula

A methodological supporting tool for determining members' quotas is the Quota Formula, which is a mathematical formula incorporating four different economic parameters.

The element with the largest weight is GDP (50%), which is split into a part that is counted in market exchange rate, and the smaller part of it is counted on Purchasing Power Parity. Economic openness comes as the second factor with a 30% weight in the formula. It refers to an average of past and current payments and receipts from/to the member country whose quota is currently calculated. Third, variability refers to the volatility of the member country's current receipts and net capital flows over a 13-year period, calculated in the form of a 3-year long moving average. Finally, reserves count for 5% weight in the equation and is associated with the 12-month average of accumulated reserves of the member country (IMF, n.d.). Predicted values of the formula are also compressed, to minimize dispersion.

1.1.4 Quotas in reality

Predicted quota shares are often inconsistent with quotas assigned to members in reality. The reason for that is, allocation of quotas is subject to further revision which may result in modifications (during the actual reform negotiations or ad-hoc, in between reforms). Important to note, however, that changes in members' quota shares must be approved by at least 85% of the member countries, both when implementing reforms or ad-hoc changes (Bryant, 2001).

Allocation of quotas is highly influenced by global politics. As an example, France and the United Kingdom, two key pillars of the politics of the European Union and the IMF, have the exact same quota shares. Although the two countries can be broadly considered to be similar in terms of their economic performances, differences in their quota formula components should mitigate against receiving the same quotas (International Monetary Fund, 2021g). Determining quotas is apparently highly influenced by political factors, especially when it is about the most powerful members of the Fund. The reason for that is that the relative amounts of quotas potentially translate into advantages and disadvantages in all functions of quotas (available loans, voting shares and expected contributions to the Fund). Blomberg and Broz, 2007, Kurz, 2016, D. Leech and R. Leech, 2013 and Aleskerov, Kalvagin and Pogorelskiy, 2008 investigate members' voting power (how crucial they are for a coalition in winning in a voting situation) based on their quotas, including different voting rules and time period. Their findings indicate that voting power may indeed be significantly different from voting shares themselves. Moreover, it also becomes clear that more wealthy members (with larger quotas) may have incentives to provide developing countries with more votes than their quotas would indicate, in order to pool financial and institutional risks in the long term.

The five countries with the largest quota shares presented in Table 1.2 imply, that no country has similarly large quota shares to the United States (International Monetary Fund, 2021k). Countries coming in with the second and third largest quota shares are Japan and China, whose shares are 2.5 times smaller than of the USA. This is specifically important in voting situations since voting shares are determined based on quotas of the members. Therefore,

Country	Amount of current quotas (in million SDRs)
United States of America	82,994.2
Japan	30,820.5
China	30,482.9
Germany	26,634.4
France	$20.155.1^{-1}$

Table 1.2: Top five IMF members with largest quota shares

the USA has 831.400 votes, equaling 16.51% of overall votes; while Japan and China have voting shares of 6.15% and 6.08% respectively.

1.1.5 IMF lending

IMF loan arrangements target member countries struggling with balance of payment problems, fiscal or financial crises. They aim to provide assets to stabilize the economy, create longer-term monetary and fiscal balance implemented through adjustment policies (conditions set by the Fund) (Sturm, Dreher and Vreeland, 2013).

Being one of the Bretton Woods institutions, its early primary role in the world economy was providing financing for the reconstruction following World War II, with a relatively limited number of members internationally. Therefore until about the 1980s, the Fund focused mostly on developed and emerging countries' financing needs. As a reaction to criticism from the broadening audience of member countries in the 1980's (including more middle income and developing countries) it started diversifying its portfolio (Barro and Lee, 2005). Nowadays there are two well-defined lines of financing programs, one offered for advanced and emerging economies, and the other for low-income countries.

Assistance provided for member countries is provided through the following programs (depending on the problems that are targeted with them): Standby Arrangements (SBAs), Flexible Credit Line (FCL) and Precautionary and Liquidity Line (PLL), Rapid Financing Instrument (RFI) and Extended Fund Facility (International Monetary Fund, 2021g). A general rule of thumb for lending at Standby and Extended Arrangements is that overall as-

 $^{^1\}mathrm{Note}$ that France has the same amount of quotas as the United Kingdom, therefore both members are on the 5^{th} place.

sistance from the IMF obtained by a member cannot exceed 145% of its quota annually and 435% cumulatively. These options for obtaining non-concessional loans target those member countries which have a broad access to international financial markets, but under special circumstances still require credits from the Fund (Copelovitch, 2010).

Low-income and/or developing countries may be eligible to receive support through the following programs: Extended Credit Facility (ECF), Standby Credit Facility (SCF) and Rapid Credit Facility (RCF) in the framework of the Poverty Reduction and Growth Trust (PRGT), which was founded in the early 1990s (International Monetary Fund, 2021c; Barro and Lee, 2005). In addition to the resources, the institution offers support for members hit by natural catastrophes or health crises via its Post-Catastrophe Debt Relief Trust. It also provides support for developing countries going through a trade liberalization process via its Trade Integration Mechanism. These concessional loans are available in the framework of programs and for a fraction of member countries, based on the World Bank's International Development Association classification (International Development Association, 2015).

It is targeting those countries which have no or very limited access to international financial markets and the IMF is one of the few options they can rely on when in financing need. These funds are, however, not disbursed from the central deposits of the members of the institution, but constitute an independent trust fund, sourced from governments and multilateral institutions (Copelovitch, 2010).

1.2 Loans, but for which price? - IMF conditionality

Borrowing from the Fund is associated with a significant trade-off members, as loans come in exchange of a bundle of real costs (interest) and conditions, packed into an IMF program lasting a couple of months up to couple of years (Sturm, Dreher and Vreeland, 2013).

Along with other program outlines, conditions are requirements determined by the professional IMF staff leading the program negotiations in a form of a report and approved of the Executive Board. For the approval of the program specifications outlined by the staff report a simple majority in the Executive Board is needed (Copelovitch, 2010). Conditions may be subject to change during the program implementation period - they may be revised and elaborated, or eliminated over time, causing a dynamic fluctuation in the overall number and scope of conditions.

1.2.1 Hard conditions

The Fund imposes conditions on the respective member which are required to be achieved by a certain time, otherwise, non-complying behaviour can potentially lead to the suspension of the program - these are called hard conditions. Based on Copelovitch, 2010; Stone, 2008; Sturm, Berger and Haan, 2005 and Sturm, Dreher and Vreeland, 2013, the first type of these are prior actions (PAs), which are conditions to be fulfilled before the first instalment of the loan would be transferred. Second, requirements which are expected to be met by the upcoming current reviews are called performance criteria (PCs). These may be macroeconomic or structural targets that are considered crucial in order to sustain the ability of paying the loan back and potentially get closer to financial and monetary stability.

1.2.2 Soft conditions

Those conditions that are unlikely to be met at earlier stages of the program or cannot be measured accurately (yet), or are of smaller importance than those included in performance criteria, are determined as non-binding conditions. These are most often targets and benchmarks and are labelled as lighthouses (Copelovitch, 2010; Sturm, Dreher and Vreeland, 2013), showing the appropriate way where the objective is further away.

1.3 Quota reforms

Reforms are usually held every five-year period and end with a detailed outline on proposed next steps and modifications. Reforms may include modifications of members' quota shares (often along with changes in the composition of the Quota Formula), changes in the overall amount of quotas, or other amendments.

Reforms are subject to the approval of the Board of Governors and need an 85% supermajority

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to be approved by the members (D. Leech, 2002). In addition, changes in members' quotas are only allowed with the consent of the respective member (International Monetary Fund, 2021b).

One key reason for regular quota reforms has been to react to internal and external criticism. There has been a longstanding debate about the fairness of the quota system in terms of power distribution and access to finance. One main question was how to ensure the democratic decision-making when members of the institution make significantly different contributions to it (Woodward, 2007; D. Leech and R. Leech, 2013; Ralph C. Bryant, 2008; Truman, 2005).

The general argument behind the alignment of voting power and financial contributions (economic strength) is the deeply financial nature and common purpose of the institution, in which the current setup actively enhances accountability and transparency (D. Leech and R. Leech, 2013).

On the other hand, there has been harsh critique since the beginning of the 2000s, coming not only from leaders of developing and emerging countries, urging for and end of "Western dominance" and neglection of the voice of poorer countries (with weaker economic positions in the world economy) (Blomberg and Broz, 2007).

Additional purposes of the reforms are also emphasized by the Fund. First of all, assessing changes in members' relative economic power over time is necessary, as wealth and productivity of members is dynamically changing globally. Second, newly joining members are supposed to learn about their quota shares and their position should be assessed carefully, receiving a fair share of quotas compared to existing members with very similar economic parameters. Furthermore, the Funds responsibility is also the evaluation of current financing needs and tailoring the overall amount of quotas in order to meet those needs (Woodward, 2007).

According to IMF, 2017 since the foundation of the institution, there have been 15 Quota Reforms, more-less in 5-year periods. During this time, the Quota Formula has been refined, new members were provided with their quotas, and the overall amount of quotas in the Fund has grown 26.3 times larger than it used to be at the start of the very first Reform.

The most recent Quota Reform is officially the 14th as one Reform in 1958/59 was implemented outside the official 5-year period. The Reform has been discussed between 2006-2010, while in the meantime implications from the 13th Reform were gradually introduced, being enforced in 2011. The 13th Reform included ad hoc quota increases for 54 members and shifted the amount of basic votes to a fixed rate of approximately 5% of all quotas. The 14th Reform had some key results associated with the previously mentioned critiques and IMF targets, which became legal in January 2016 (Ian Mitchell and Sam Hughes, 2021).

The most significant takeaway of the Reform is the doubling of overall quota shares available in the Fund, from approximately 238.5 billion to 477 billion SDRs. This results in an increase in overall allocated basic votes among countries, favoring those with smaller initial quotas. Additionally, there has been a shift from over- to underrepresented countries (rooting from distortions made by the ad hoc increase prior to that), including 6% of the overall quotas. Quotas have been shifted to emerging and developing countries as well, from advanced economies, accounting for the same ratio as previously. Relative positions of some economies have changed significantly, dedicated as better reflecting real global economic relations (IMF, 2017).

According to the current voting shares, the United States is the only member that can exercise veto power on its own (Clark, 2017). Other countries with large shares are only able to influence outcomes if they manage to form coalitions.

This distribution of power is problematic on its own due to two factors (Blomberg and Broz, 2007). First, members (beyond the USA) have been unable to make decisions without the formal consent of the United States. No consent from the USA may lead to prolongation of decision-making processes or making an unfavourable compromise between the US and the rest. Second, the asymmetric distribution of power tends to ignore the voice of less developed countries with smaller quota shares. A coalition of members with small quota shares each may not have significant chances to reach the 85%, only when having countries on their sides with larger shares. In many cases, however, politics plays a crucial role in winning the cooperation of members with smaller quota shares vulnerable in the decision-making processes and their needs often neglected (Truman, 2005).

This critique has been valid, despite the comprehensive reforms implemented during the 13^{th} and 14^{th} reforms.

The situation has somewhat improved by providing previously weak, small and/or low-income economies with an increase in their shares. Unfortunately, the reason behind the change is not stated: it may partly be due to previous underrepresented status, miraculous improvement in economic performance or the role of basic votes. However, an overwhelming fraction of the literature has early on started to discover the possible role of politics in operations of the Fund (Blomberg and Broz, 2007; D. Leech and R. Leech, 2013; Aleskerov, Kalyagin and Pogorelskiy, 2008).

Following this logic, certain internal political factors also may indeed contribute to such significant, positive changes in members' quota shares. Based on the work of Barro and Lee, 2005 analysing links between loan allocation of the Fund and certain factors, there are political motives worth to mention if it is about quota allocation. These factors include political proximity to major European economies or the United States, number of staff working previously or currently in the Fund from the certain country, or previous co-operations between countries and the Fund. These considerations, however, only constitute hypothesis to be tested in the future – at least in relation to the quotas.

Chapter 2

Theory and hypotheses

The 14th General Quota Reform affected all member countries due to the raise in the overall number of quotas. However, not all members observed a change in their quota shares. In simple terms, this implies "gainers" and "losers" when we look at the shares in a comparative perspective, but part of the membership remained to have the same amounts of quota shares as a consequence of the Reform, even though the absolute amount of quotas they own changed.

2.1 Determinants of IMF lending and conditionality

The link between loan/aid allocation and voting shares may not seem to be obvious. First of all, the most straightforward factor to mention is the direct link of voting power and specific decisions important for members in financing need. Members with larger quota shares have larger voting shares as well. Based on this, they have a greater ability to directly influence decisions (on their own and by forming coalitions) which also leads to larger lobbying power. Moreover, the 24 representatives in the Executive Board are also appointed based on quota shares, with seven single seats and 17 "group seats". The seven single owners of a seat are the six most powerful members based on their quotas, plus Saudi Arabia. Both single and group seats appoint their own representative, who participates in the decision-making on behalf of his/her member(s)' interests (International Monetary Fund, 2021e).

Another, indirect link to mention is that quota shares play a role in themselves in determining the amount of available loans for members. Thus, in theory, members with higher quotas are supposed to have access to more extensive financial assistance in absolute terms. This, however, may not be consistent with past borrowing records. First, the main reason for borrowers turning to the Fund may be the lack of other financing opportunities, i.e. due to limited eligibility and access to financing, or due to unfavorable track records and positions at international lenders. Therefore, as long as a member country receives credit from other sources with more favorable conditions, it may not be of its interests to apply for a program with possibly stringent conditionality involved.

Second, quotas may constitute as an upper bound a member can borrow, therefore providing a reason for negotiating for a larger quota. According to Copelovitch, 2010, over the decades of programs, one can observe loans lent to members which exceeded both their quotas and the % limit specified by the Fund relative to the quota of members¹, in a significant fraction of cases.

Based on literature of the past two decades investigating loan allocations and conditionality, several major hypotheses emerged regarding the main determinants of them. The main reason for the emerging body of literature had been the insufficient explanatory power of macroeconomic variables that the Fund originally stated as being crucial for the staff when preparing program outlines for members.

Factors that the institution specifically focuses on are directly related to the types of conditions it may impose. These include structural requirements, fiscal and monetary guidelines, trade- and external investment-related measures. To name some specific measures, targets may be (among others) setting up a stable fiscal framework, reduce external debt service to a certain level, along with budget deficit, take action to stabilize the own currency, reach a certain threshold of reserves (International Monetary Fund, 2021f; International Monetary Fund, 2021d). Moreover, as stated by the Fund, the number and stringency of conditions should be directly comparable with loan size, i.e. larger loans require to undertake more extensive conditionality (Sturm, Dreher and Vreeland, 2013).

Testing those factors on data from recent decades, most of them did not turn out to be significantly affecting loan size and conditionality. In addition to that, despite the Fund outlining that it would be only lending to illiquid but not insolvent countries, there have

¹See the principles specified for each program in section "IMF lending".

been examples for the latter. For specific examples see Copelovitch, 2010; Sturm, Dreher and Vreeland, 2013; Sturm, Berger and Haan, 2005; Dreher and Jensen, 2007; Stone, 2008; Milner and Tingley, 2013; Thacker, 1999; Stone, 2004; Moser and Sturm, 2011.

These major findings indicated the presence of other factors influencing loan and conditionality decisions, which led to testing a whole range of variables of political and institutional nature. As an increasing number of studies emerged, different (complementary or contradictory) hypotheses were created.

Theories on potential determinants The first major idea of influential factors is that the Monetary Fund is directly governed along the interests of the most powerful group of members. The definition of this group differs across studies in the literature. Most often the USA alone, or the G5 group is mentioned to directly and indirectly influence Fund decisions and funding outcomes. Direct influence may be exerted by members trough their quota shares, which provide them with voting power in the Executive Board. Indirect power includes political and economic proximity to member countries (similarity in United Nations General Assembly voting outcomes, aid disbursements among members, intensity of trade and investment in member countries, etc.). Supporters of this theory are Dreher and Jensen, 2007; Stone, 2008; Oberdabernig, 2018; Barro and Lee, 2005; Sturm, Berger and Haan, 2005; Dreher, Sturm and Vreeland, 2007; Copelovitch, 2010; Milner and Tingley, 2013; Moser and Sturm, 2011.

Second, lending decisions may also be modelled as principal-agent problems between the Fund (principal) and its staff (agents). The Fund is seeking to provide its members with appropriate financing and relies on the expertise of its own professionals. In case the staff exhibits rent seeking behaviour in order to maximize its own autonomy and short-term results, it may go against the overall and long-term interests of groups of members of the Fund. This may lead to distortions in program participation and loan allocation outcomes, i.e. interest conflicts mitigate against finding a consequent pattern in decisions about financing. Promoters of this idea are Moser and Sturm, 2011; Naqvi, 2014; Copelovitch, 2010; Milner and Tingley, 2013. Third, there is also a blend of previous theories, involving interactions. In contrast to those

stating the hegemony of the US, Copelovitch, 2010 shifts the focus on the "G5", the five members with the largest quotas. He argues that theories emphasizing the role of the United States may ignore the influence of the remaining members holding their own seats in the Executive Board and pursuing their own strategic goals. Nevertheless, interactions among their goals and interests constitute significant factors in the decision-making process regarding loans and conditionality, which is missing from the previous theory. Another, additional factor is the role of IMF staff in seeking their autonomy, yet constrained by the significant power of the Executive Board. Since a conflict with the Board is undesirable, the staff is constrained to prepare program documentations which will likely be accepted.

The author examines the explanatory power of loans outstanding at the members of G5 (financial interests), voting affinity in the United Nations General Assembly (alignment of geopolitical interests) on loan size and conditionality. His findings include that in case of substantial overall financial interests involved at the G5, it is likely that differences in preferences inside the group leads to an internal conflict over the allocation, and results in smaller loans. When the geopolitical importance for a group as a whole is large, but preferences inside G5 diverge, it leads to potential moral hazard and the allocation of larger loans. When the interest intensity of the borrowing member to the G5 is relatively small (both financial and geopolitical interests diminishing), no alignment in preferences in the G5 group provides the IMF staff with larger autonomy, using the "agency slack".

Fourth, as Gould, 2003 argues, conditionality of single IMF programs may be influenced by independent suppliers of financing. As the Fund often relies on external funding (especially in case of concessional financing (Copelovitch, 2010)), those providing it may set conditions for "forwarding" their funds to IMF members in need. That means, the IMF has to take on the role of balancing out conditions that are both doable for the borrower and acceptable for the lender at the same time, without facing any sorts of strategic alignment in the interests of the lenders. This said, the IMF alone is having a way smaller freedom and room for determining conditions that assumed in previous theories (Copelovitch, 2010; Guimaraes and Ladeira, 2017).

Fifth, it is a relatively new, but highly robust finding in the literature, that membership

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in influential bodies of International Organizations may play a crucial role in influencing decisions about financing. Dreher, Sturm and Vreeland, 2007; Moser and Sturm, 2011; Sturm, Dreher and Vreeland, 2013 test and discuss the importance of temporary membership in the UN Security Council on financing outcomes (mostly conditionality).

Sixth, a set of political variables are also often measured in the literature. Political determinants of members, such as quality of democracy, lagged legislative elections, government qualities, fractionalization, rule of law and political stability are key independent and/or control variables Dreher and Jensen, 2007; Stone, 2008; Oberdabernig, 2018; Barro and Lee, 2005; Sturm, Berger and Haan, 2005; Barro and Lee, 2005; Dreher, Sturm and Vreeland, 2007; Copelovitch, 2010; Milner and Tingley, 2013; Moser and Sturm, 2011; Oberdabernig, 2018; Thacker, 1999.

Seventh, path dependency, participation in previous IMF programs (in recent years, five years) is shown to be significant as determinant in financing as well (Moser and Sturm, 2011; Copelovitch, 2010; Kutan, n.d.).

As Copelovitch, 2010 argues, none of these theories are completely and solely true and each has its own limitations. Most likely a blend of the theories above is working in the background of financing decisions, as they are not closing each other out completely.

Hypothesis 1 Hypothesis 1 reflects on the change in the amounts of loans to members associated with the 14th Reform. According to the official formulation, the accessible amount of funding depends most essentially on the quota of the member, but this only implies the approximate amount that a member may obtain. In reality, it may well be, that a member is found eligible for only a fraction of its quota-based loans, or on the contrary, receives more financial assistance then implied by its quota. In the context of the Reform, gainers of it may still be observed to get more funding than before (and same for losers), the focus is on the association of it with their quota change. An increase in the lending received by them may be directly motivated by their increased quotas, but also other factors enabling them to access funding more easily (explained in hypotheses 2 and 3). If this hypothesis holds, we

expect loan allocations to be loosely correlated with quota shares, but more determined by other factors.

Hypothesis 2 Changes in quota shares might reflect a shift in the way that affected members are treated when asking for funding. Hypothesis 2 assumes that a positive or negative change in shares is associated with slightly different conditionalities that are imposed on members by the Fund. This can manifest in forms of: agreed terms (number), "cost" of borrowing, length of investigative and follow-up reports during the conditionality period, relative length of agreed time frame and relative size and number of instalments for paying back. If this hypothesis holds, data presents a significant variation in the above factors across members, and there is a statistically significant relationship between relative change in quota shares and the condition factors.

Hypothesis 3 Hypothesis 3 is focusing on potential influence exerted by members on other members. In this scenario, larger countries' quota gains are not associated with larger need for financial assistance, but rather the opposite. They may be in the position of investing in the Fund and improving their position signalled by their quotas. This possibly leads to (i) expressing their power in the institution towards less developed/economically less influential members, (ii) potentially influencing the assessment of other members and their chances for funding. In order to test this, a variable measuring the interconnectedness of China and all other member states is needed.

If this hypothesis holds, I manage to present that controlling for interconnectedness with the China does have an additional, statistically significant association with loan allocations and its characteristics.

The role of China Including China in the analysis is an implication of several reasons. First of all, no published work has put much focus on the emerging role of China in the IMF recently. This may hve to do with the recent quota share enlargement that it received, during the 14th General Quota Reform of the Fund (International Monetary Fund, 2011). This provided the member with unprecedented improvement in its position, among emerging non-Western members (e.g. Russia, Saudi-Arabia, India etc.). China became the third most influential members in the Fund based on its quota share (from the 6th place); received its own seat in the Executive Board. Moreover, supposing that the UN Security Council membership is a significant variable in my analysis (Dreher and Jensen, 2007; Sturm, Dreher and Vreeland, 2013), it is an important factor that China is a permanent member in the UNSC (Dreher, Sturm and Vreeland, 2007).

China is not a conventional Western democracy, which characteristics have seem to be important in the leading members' features ever since the Bretton Woods institutions were funded. Providing it with a powerful position in the Fund has been a key question, but the rapid economic growth it produced put large pressure on leading members to update China's position according to its new relative economic position in the World economy. China has not been promoting democratic values and, based on Aid Data, 2021a, in the last decades its expansion in terms of promoting international development globally has been large. It showed fairly different patterns than most other large donors: while Western donors mostly disbursed Official Development Assistance (ODA) across its recepients, China's state activity focused little on aid. Its main tool for development purposes was observable in forms of non-concessional loans with favorable (and often controversial) conditions, often to nondemocratic countries (Aid Data, 2021b; Leah Lynch, Sharon Andersen and Tianyu Zhu, 2021; Aid Data, 2021a). China is not publishing official data on assistance it provides, but estimates show that it may possibly have an overall assistance portfolio of at least the same size as the USA (Aid Data, 2021b).

Part of this portfolio is meant as investment in the framework of the Belt and Road Initiative (BRI), which is a significant project initiated by China, taking place in multiple dozens of countries. Its primary focus is infrastructure and its main goal is to enhance trade and cooperation between China and almost all continents by improving transportation and industrial infrastructure (David Sacks, 2021).

An additional key feature of Chinese lending is its focus: as other large donors mostly focus on humanitarian crises, education, health care or military purposes, a significant fraction of Chinese projects cover infrastructural and transportation projects for which they often

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provide their know-how and materials as well (Aid Data, 2021b; Leah Lynch, Sharon Andersen and Tianyu Zhu, 2021; NPR, 2021).

Chapter 3

Data and Methodology

In this section I explain the main considerations behind the identification strategy of this thesis. Aligned with that, I describe the data and its components.

3.1 Methodology

The desired strategy to uncover the patterns behind program participation, loan size and conditionality consisted of three main parts.

First, I aimed at investigating which variables may affect the three outcomes significantly. Therefore I constructed Ordinary Least Squares (OLS) regressions one by one, respective to the outcome variables, including several explanatory variables and controls. After that, the intervention of the Quota Reform was utilized to create treatment and control groups, where the first one is members whose quota shares have been affected by the Reform, and the second whose not. As there proved to be significant differences in terms of the mean covariates between treatment and controls groups, matching the data was necessary. The data was matched using propensity score matching, in order to ensure covariate balance. Finally, I constructed a Difference-in-Differences setup, in which I compared mean outcomes for all three dependent variables between time periods (2016 being the cutoff) and groups¹.

¹All codes and the final data are available in my public GitHub repository: https://github.com/bfleur/lmf_loans.

3.2 Econometric considerations

3.2.1 Implications of the initial OLS setup

The OLS setup allows for identification of statistically significant relationships, but is considered an improper tool to uncover causality. I utilize this setup in a way that mitigates against the most relevant threats for identification. First, I rely on independent variables that proved to be significant predictors in the literature of this field over the last 25 years. Second, I apply a range of control variables, in order to deal with potential endogenous variation likely present in the independent variables. A reason for suspecting endogenous variation is that treatment assignment is nonrandom, there are publicly accessible (economic reasons) as well as less documented reasons (political) for modification of the quotas of member countries. Self-selection may be an additional example why treated and untreated groups may be heterogeneous. Some members do not desire receiving larger quotas in the Fund, other however may lobby for it quote actively, driven by diverse motives. Moreover, in case of the countable outcome variables I am using robust standard errors to mitigate against heteroskedasticity, due to missing control variables.

In general, in case of OLS methods it is never entirely possible to control for all endogeneity in the data. In more severe cases this may introduce Omitted Variable Bias, which is problematic as it denotes a potential confounder for which we do not control and thus its effect is picked up by the explanatory variable. In my case this is even more likely, as I am using yearly macroeconomic country data, which is prone to be affected by a range of factors, from which many are not possible to be identified directly.

3.2.2 Covariate balance and common support

In order for the Diff-in-Diff setup to succeed, I need to have observations both in the treatment and control groups that are comparable in many of their general aspects but not in the ones that I need to variation in, to uncover the effect. Once the distribution of key explanatory variable values is skewed or there is limited similarity in their average values, it may introduce bias into my estimations. As this was the case with most of the key covariates in the data,

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matching was necessary. I preferred having observations in the treatment and control groups from similar demographic and political setups. The propensity scores of the observations (country-year pairs) is supposed to be conducted based on variables potentially unrelated to the treatment assignment (the change in the quota share).

An additional characteristic which is significant to test is the presence of common support. After calculating the propensity scores it became apparent that the data suffers from lack of common support, which means observations with certain features in terms of the variables used for deriving the propensity score existed in only one of the two groups and therefore did not have the chance to be matched at all. This subsequently lead to a considerable drop in observations in the matched data.

As the OLS regression is not designed to either identify potential problems regarding lack of common support, or tackle it, the DiD estimation potentially provides more reliable results after testing this condition.

3.2.3 Estimating ATET

As it turned it that the sample as a whole is lacking common support, I choose to focus on identifying the average treatment effect on the treated (ATET) after matching, and not the average treatment effect across all observations (ATE). This is further enhanced by the parallel trend assumption requirement which can be contextualized as similar trends being present in both treatment and control groups before the intervention. That said, had those observations not been treated during the Quota Reform, they would have followed the same trends in terms of program participation, loan size and conditionality. Once this assumption holds, the estimates are reasonably close to the ATET.

In this case the initial mechanism for program participation is tightly related to the Fund's lender of last resort functionality. As most of the members which turn to the IMF for loans are in a difficult financial situation and/or have very limited access to international financial markets (low-income countries). As members are facing years-long conditions that pose an external control on the national governments, IMF loans are often perceived as "last options" for members to obtain financing, once all other options are carefully considered.

3.2.4 Choice of method

Regarding exact methods, in the OLS setup I used a Maximum Likelihood Estimation (MLE) model, logit, as the predicted outcome was binary (program participation). For the two other outcome variables I used a General Linear Model, Poisson regression. The main reason for this is the distribution of average loan size and word and sentence counts, which are skewed and not normal.

3.2.5 Potential threats, internal and external validity

In terms of internal validity, the methodological setup is designed to estimate proper causal effects of the independent variables on all of the outcomes. This is done by including controls, transforming variables, choosing the appropriate models and estimating the average treatment effect on the treated.

However, potential threats to internal validity arise in two main forms. First, in international development financing one is often confronted with the issue of reverse causality. In my case, participation in previous programs, obtaining loans and their conditions all may affect the future economic and political indicators of the participating members in different channels. This may affect future chances to take on a loan and with which conditions. I am attempting to tackle this issue by controlling with a variable denoting the average participated years, calculated with a five-year moving average.

Second, the OLS regressions do not account for specific loan types, although it was originally planned. Concessional loans are restricted for low-income member countries and therefore might typically have different determinants or are affected differently by the same factors than non-concessional loans. The problem that arose here was that the number of observations in the sample would have been restricted too much when subsetting the sample into concessional and non-concessional loan-related groups. This is certainly a negative aspect of working with only 9 years of country data. Please find the frequency table about loan type distribution in the Appendix A in Table A.5.

External validity of the OLS estimations may be medium in general. The decomposition issue

potentially lowers the possibility of generalizing the results. On the other hand, however, the setup and many variables are stemming from the literature and have been tested various times in different scenarios (fixed effects panel data with different time horizons, logit, tobit models, etc.). The new variables I am introducing in China and the proxy for conditionality have proved to work well which provide additional support for external validity.

3.3 Data and model

The whole data set I have used for the analysis is comprised of 43 variables, including yearly data on all 189 member countries of the IMF. The number of members was stable over the period of focus.

The time frame for the estimations was from 2011 until 2019. That is the period right after the 13th Quota Reform became effective (January 2011), including the cutoff point, 2016, when the implications of the 14th Reform became official. Although there have been reforms following the 14th, none of them implied any changes in the decision-making processes or in quota share. Based on that, the end year of the period used is 2019, as including it came with only a slight jump in missing values (some variables did not cover some countries for the year 2019). In comparison, the trade-off of including 2020 would have been too large the coverage of countries was incomplete, even for key explanatory variables.

Based on the information above, the data contains 2038 observations altogether.

3.3.1 Data collection process

The necessary variables were determined based on three factors. First, the basis pool was determined following a thorough review of the literature. I found the summary table about all previous works in the Appendix of the article from Moser and Sturm, 2011 particularly useful. It included all significant pieces of the literature on program participation and loan size determinants until 2010. The list provided was extended with further, more recent works by me, extracting the variables and weighting them by relevance and frequency in the studies. For the outcomes of program participation and loan size I would put an emphasis

on the empirical work of Sturm, Berger and Haan, 2005 and Barro and Lee, 2005. Regarding influential work investigating conditionality, I relied heavily on Sturm, Dreher and Vreeland, 2013 and Dreher and Jensen, 2007.

This initial pool was then revised by me based on the main focus of my planned study (China's role and the role of the Quota Reform), which resulted in adding additional variables.

3.3.2 Variables and summary statistics

The final set of variables can be grouped based on their focus and objective they fulfil in the analysis. Please find primary descriptive statistics about them at the end of this subsection in Table 3.2, and descriptive statistics for all numeric variables in the Appendix A in table A.1, table A.2, table A.3, table A.4. Correlations between numeric variables can be found in the Appendix A in Figure A.2, overview about missing values in the Appendix A in Figure A.1.

Dependent variables The first one, program participation is a dummy variable measuring whether the member participated in a given year in an IMF program (all kinds of programs). It is set to 1 if it participated, and 0 if not. The distribution of observations based on program participation and Quota Reform effect can be found in Table 3.1

	IMF Program participation frequency	Perc. of total	Affected by Quota Reform frequency	Perc. of total
0	1496	73.41	1403	68.84
1	542	26.59	635	31.16
NA	0		0	0.00
Total	2038	100	2038	100

Table 3.1: Frequencies and percentages of IMF Program participation and Quota Reform

The second outcome variable is measuring yearly average loan size in million SDRs, conditional on loan participation, and is used in a log form (included in Poisson regressions). This variable was created by me by spreading the initial loan disbursement in the beginning of the program evenly across the duration of it. This is not be most perfect method to take loans size into account, but leaving the consecutive years of the program blank would have resulted in significant amount of missing values. The current method was therefore able to capture loan participation as well.

See the distribution of the average yearly loansize in the Appendix A on Figure A.3. It is visible that the distribution has a right tail and is far from normal. A significant fraction of loans fall into a single bracket which indicates the average loan sizes to be stable across countries. This is slightly controversial, as one would expect significant variation in sizes due to differences in population and economic size. The variation may however be smoothed due to taking the averages of loans across their durations.

Third, measuring conditionality already proved to be difficult in the literature. The main reason for this is that conditionality is hard to measure, and many of its dimensions have to be taken into account in order to avoid biased estimations. Previous studies utilized a blend of the number of conditions (over program quarters) and scope of conditions. The current study enjoys a relatively unconventional measure of conditionality. Namely, the word count and sentence count of IMF program reports issued by IMF staff on the country in the respective year.

I argue for this measure to be an appropriate proxy for conditionality based on the following assumption. Members which are facing less problems and a less painful situation in relative terms may receive shorter reports, containing less problematic aspects mentioned by staff. Parallel to that, these members also may face less conditions in number and less strict ones in extent and scope. The reports produced by IMF staff are highly significant in many contexts stretching from research purposes in the fields of economics, political science or international relations. Additionally, the findings are comprehensive enough to potentially be inputs for investment or lending decisions of firms and financial institutions (Mihalyi and Mate, 2018).

The word count is measured as all elements of the text of the respective program report, minus all articles, signs and spaces. Due to their "building block" nature in texts, text mining literature also calls these "tokens". In this context I am using word and token counts therefore interchangeably. The sentence count is comprised of full sentences, separated by
sentence closing signs. See the distribution of word and sentence counts in the Appendix A on Figure A.4 and Figure A.5.

Economic variables Economic independent variables are ones referring to macroeconomic factors potentially influencing the chance for program participation, loan size or conditionality. These are moreover those, which transparently and consequently play a role, according to the Fund as well. This distinction is made as political variables also include some macroeconomic measures, but those are assumed to work through "political channels" in the Fund (e.g. economic proximity from the USA, which is subtle and is indirectly working in the background).

First, real GDP per capita growth is included (annual percentage value). This has proved to have a negative and significant effect both on program participation and loan size. Second, total international reserves is considered, measured in months of imports. This factor shows, roughly how many months long the country would be able to pay for its imports, without additional income but the reserves. It is expected to have a negative effect on the chance for program participation, loan size and word/sentence counts overall. The third variable is debt service ratio which is the total debt service of the member in given year, to its exports. It is supposed to have a positive effect on all the dependent variables. Moreover, as fourth, trade balance to GDP is included (current account balance would be a better measure but it had many more missing values), with a negative effect expected. These variables are the ones most often referred to in previous studies. The assumption behind these variables are that larger economic growth, more reserves and trade surplus potentially lead to better financial states. On the opposite, larger debt to export ratio gives reason to concerns.

Additional variables include log GDP per capita (in thousands of USD in constant 2010 prices), Foreign direct Investment net inflows (in percentage of GDP), short-term debt to total debt, and log inflation (measured by GDP deflator). The log GDP per capita is expected to have a negative effect on the chance for program participation and loan size, while inflation a negative effect on program participation and loan size, and positive on the word/sentence counts. FDI and short-term debt to total debt ratio are expected to have negative effects on all outcome variables. The reason for these expectations is that they signal the general

state of the economy and are correlated with crises. Therefore the Fund is more focusing on short-term debt relief as well, to mitigate against irreversible deterioration of credit ratings and financial situation.

Political variables First, political proximity to the USA and China are included. These are derived the following way from the United General Assembly voting occasions. If the member country votes in a specific election the same way the US or China (respectively at one of the variables), it receives 1, if not, 0. If it abstains, or is absent, it gets 0.5. These credits are then summarized by year and divided by all election occasions that year to extract a mean count. This is proved to have a positive correlation with chance for program participation, larger loan size and less conditions in the literature (so far for the US).

Following political proximity, economic proximity was computed. This is the share of the export and import of the US and China that the respective member receives or produces. This results in four different variables: export shares to the US/China, import shares from the US/China. If one of them is high, it is assumed to result in an important economic position, therefore larger loans with less or more favourable conditions.

Electoral democracy is set to be important in terms of political alignment with the West. Therefore more democratic countries tend to have higher loans and less conditions on average (also operating as a positive feature to be incentivised). It is measured as the electoral democracy index of Varieties of Democracy.

Aid shares received from the US have proved to be important variables. Those members receiving much military aid or Official Development Assistance (ODA) tend to be higher geopolitical importance for the US, enjoying more favourable conditions in the Fund. Here aid shares were used that a member received from the US as a share of all disbursed by the US in a given year. Unfortunately this measure was not available for China. The useful data set on Chinese aid produced by Aid Data (Aid Data, 2021a) only covers years until 2014. This measure was switched to a dummy which indicated if the member was o the list of the Belt and Road Initiative participant countries in the given year.

The last one of this group indicated the United Nations Security Council membership in a

given year, in the form of a dummy variable. In recent years this variable has received larger coverage in the literature and proved to by highly significant (Sturm, Dreher and Vreeland, 2013). Participating temporary members in the Council may be of large strategic importance, enjoying more benefits in the Fund for their membership period.

Standard control variables Standard control variables include a 5-year moving average of participation in programs. This is meant to control for path dependency and reflecting on the assumption of preferred countries, which are regularly financed by the Fund. Additionally, differences in population may be large between countries, and this is not captured by all variables listed before. It is transformed into a log version to avoid extreme skewedness and normalize values.

	Average yearly	Token count	Sentence count
	loansize	in program documents	in program documents
Min.	0.00000	10862	303
1st Quantile	13.32688	26388.75	823.25
Median	62.55708	41757	1332.5
Mean	1330.96954	52056.28395	1659.740741
3rd Quantile	336.75000	64000.25	2076
Max.	44563.50000	358068	12022
NA's	1496.00000	1552	1552

Table 3.2: Summary statistics I.

3.3.3 Data sources

I utilized the "Monitoring of Fund Arrangements" (MONA) database for deriving data on IMF Programs (International Monetary Fund, 2021h). This contained a wide range of features regarding programs conducted by the Fund since 2002. Each observation was a single arrangement, along with program duration, loan size, revision details, the event of a cancellation denoted, and some additional characteristics. This was the source of the outcome variables on program participation and loan size, as well as the 5-year moving average on years of loan participation.

For the third dependent variable I made use of a database on scraped IMF country reports.

This is the one originally used for the paper of Mihalyi and Mate, 2018. The text mining dataset consists of 5561 country reports covering the period of 2004 and 2018. Each observation was one review document which made it necessary to extract those on IMF programs. Moreover, as there were cases where multiple reports were delivered on a single country in a given year, I summarized the word counts and sentence counts separately, this way creating two variables per report types (word count per year per country and sentence count the same way). I included word and sentence counts for IMF program documents and Article IV documents (four variables) in the final dataset, but only made use of the former document type.

Following this, I utilized an IMF quota revision document from 2017 which contained the quota shares of each member country before the 14th Reform and after it (International Monetary Fund, 2021k). From these variables I managed to construct a single one on quota shares and an additional binary one introducing the treatment and dividing the sample into groups.

For the economic variables and the population variable I used data from the World Bank Open Data database (World Bank, 2021).

In order to add the political variables, I relied on several different data sources. First, I gained the mean UN General Assembly voting counts from the United Nations General Assembly Voting data from Harvard Dataverse (Voeten, Strezhnev and Bailey, 2021). This dataset contains voting outcomes for each UN GA voting occasion since 1946 until 2020. Each observation is denoting a country's vote for a specific vote, along with session numbers, and the date it happened. From this I computed the mean vote counts for voting alignment with the US and China, for each observation.

Second, the electoral democracy scores were extracted from the Varieties of Democracy Core dataset (Varieties of Democracy, 2021). The dataset contains almost a hundred of variables, including democracy indices and their components from the 18th century, on a yearly basis for most countries globally. I used one of the key democracy indices of V-Dem, called electoral democracy index (v2x_polyarchy).

Third, import and export shares I have found in the "World Integrated Trade Solution" database of the World Bank (World Integrated Trade Solution, 2021). This database contains yearly and monhtly trade, trade related and tariff data on most countries globally, per reporter country.

Fourth, aid shares received from the USA in a given year were derived from the "Foreign Aid Explorer" application of the USAID (USAID, 2021). Yearly data is contained on all countries globally, and covers obligations, disbursements, implementing agencies and programs, types and channels, funding agencies, besides the fiscal year. Fiscal year being reported was a problem, but unfortunately there was no other appropriate data source that could have been used, which contained calendar year data. The presence of fiscal year did not seem to be a problem as 9 months were contained in the calendar year format, and the remaining 3 months were included into the next fiscal year variable.

Fifth, data of participation in the Belt and Road Initiative was downloaded from an independent investigative source as there was not official site containing data on this, the name is "Council on Foreign Relations" (David Sacks, 2021). It contained yearly data on the widening membership until 2020.

Sixth, membership in the UN Security Council was covered by the paper of Dreher, Sturm and Vreeland, 2007, and had been updated in the following years, the last update being in 2020.

As each of the databases contained the country names in a different format, I needed a consistent ID variable that - along with the year - provided a reliable basis for merging the single parts together. I decided to use the ISO 3166 Alpha-3 character country codes and sourced them from the R package of Vincent Arel Bundock, 2021.

Chapter 4

Results

First, I estimate plain OLS regressions, which is followed by the Difference-in-differences estimations.

4.1 OLS specifications

For IMF Program participation I am using a Maximum Likelihood Estimation (MLE) model, logit, which gives estimates of the likelihood that a member participates in a program. The baseline and extended versions of the model can be found in subsection 4.1.1. For estimating the relationship between the explanatory and control variables as well as loan size and word/sentence count Poisson regressions are used. The reason for this is that the distribution of these dependent variables is not normal but quite close to Poisson. The specifications and results of these models are to be found in subsections 4.1.2 and 4.1.3.

4.1.1 Model 1

This logit model was specified to uncover the relationship between explanatory variables and IMF Program participation. Results of additional models of both the basic and the extended specifications can be found in the Appendix A, in Table A.6 and Table A.7.

The summarized results of the basic and extended specifications are presented in Table 4.1.

First I only add the most frequently used economic independent variables, log GDP per capita, international reserves in months of imports and debt service ratio. Additionally, the explanatory power of quota shares is also investigated. Log GDP per capita and debt service ratio are showing highly significant results, aligned with our expectations that larger income per capita is associated with a smaller chance to participate in a program, while larger debt enhances this chance. However, both estimates become statistically insignificant when the equations are extended. In the second and third models years of participation, population controls as well as electoral democracy independent variables are added, where only the years of participation remains relatively stable and significant at all conventional levels. The results of it signal that one additional year in a Program is associated with a close to three times larger chance for taking on a program again.

In Model 4 and 5 US and China specific variables are added, without significant results on program participation. It is feasible to add groups of country-related variables together as testing the correlations between them did not present a potential threat of multicollinearity.

It is important to note, however - as shown in Table A.6 and Table A.7 - that the average participated years variable is having a quite strong overall effect on all other covariates' coefficients. Models not containing it present a large share of the other covariates to be statistically highly significant.

4.1.2 Model 2

The current specification uses Poisson regressions to investigate the relationship between assumed determinants and average loan size. Results of additional models of both the basic and the extended specifications can be found in the Appendix A, in Table A.8 and Table A.9.

The summarized results of the basic and extended specifications are presented in Table 4.2.

First I included the set of main economic independent and control variables in two models as some of them measured too similar characteristics. These were the ones related to income, debt and the trade balance and quota shares pair, which could not be included in the same equation. After that I added US and China specific political variables. The sample size is obviously a problem here, as it provides too little variation in the data to reliably discover patterns in it. That means I have to interpret the results with caution.

All of the variables show to have statistically significant relationships with average loan size

		De	pendent variable	•	
		IMF p	rogram participa	ation	
	(1)	(2)	(3)	(4)	(5)
$\log \text{GDP/pc}$	-0.682^{***}	0.044	0.211	0.055	0.307
	(0.087)	(0.338)	(0.336)	(0.392)	(0.437)
Reserves	-0.003	0.038	0.040	0.099	-0.008
	(0.019)	(0.094)	(0.098)	(0.104)	(0.137)
Debt s. ratio	0.028***	-0.001	0.004	0.004	-0.002
0 + 1	(0.006)	(0.020)	(0.021)	(0.026)	(0.030)
Quotasnare	-0.205	-0.822	-1.521	-2.223	-5.502
Vrs of particip	(0.159)	(1.424) 2.871***	(1.110) 2.087***	(2.300) 2.045***	(3.373) 3.170***
its of particip.		(0.269)	(0.302)	(0.323)	(0.403)
log population		-0.106	(0.002)	-0.006	(0.400) 0.074
log population		(0.188)		(0.260)	(0.288)
UNSC membership		(0.100)	-0.211	(0.200)	(0.200)
r i i i i i i i i i i i i i i i i i i i			(1.079)		
El. democracy			0.128	-0.492	
, i i i i i i i i i i i i i i i i i i i			(1.487)	(1.593)	
Mean v. c. US			. ,	-0.484	
				(1.919)	
Ex to US				-0.141	
				(2.265)	
IM from US				0.326	
C1 C · · 1				(1.959)	
Share of aid				-15.867^{*}	
M CI:				(8.325)	0.007
Mean v. c. Unina					-0.097
EX to China					(3.249) 0.344
EX to Onna					(0.891)
IM from China					0.699
					(1.982)
BRI part.					0.001
1					(0.632)
Constant	4.364^{***}	-6.885	-10.195^{***}	-8.405	-11.815
	(0.633)	(5.048)	(2.511)	(6.176)	(7.257)
Observations	1.058	1.058	944	815	664
Akaike Inf. Crit.	1,292.732	183.370	167.525	164.009	134.951
Note:				*p<0.1: **p<0	05: ***p<0.01

Table 4.1: Logit results summary

at 99% confidence level. Log GDP per capita has a positive and larger coefficient than GDP per capita growth, which is diminishing and switching between negative and positive in the extended models. As Poisson is operating with exponentials, interpretation is slightly different from conventional OLS regressions. As the coefficient of GDP per capita growth is negative and equals to -0.019 in Model 4, I can conclude that an average 1% point larger growth rate in per capita income is associated with an exp(-0.019) times smaller mean of loan size on average in the sample. This means a 0.98-times smaller loan size on average.

GDP growth and debt variable estimates are consistent with my expectations regarding their influence on loan size, although the debt service ratio changes its sign to Model 4. Trade balance and reserves are not quite aligned with previous literature findings as they seem to contradict the assumption that better trade balance and more reserves lead to smaller loans. Using the additional tables in the Appendix A, electoral democracy, trade with the US and China (mostly export) are significant determinants as well. Quota shares are attributed to have strong positive effects on loan size, as expected and communicated by the Fund.

4.1.3 Model 3

Sum word count The current specification uses Poisson regressions to investigate the relationship between assumed determinants and word count of IMF Program documents. Results of additional models of both the basic and the extended specifications can be found in the Appendix A, in Table A.10 and Table A.11.

The summarized results of the basic and extended specifications are presented in Table 4.3.

Model 1 starts off with the basic economic independent variables and Model 2-4 contain additional political and control variables. All coefficients in the models are statistically significant at the highest conventional level, which infers that I can reject the null hypotheses about them not being significantly different from zero. However, the amplitudes and signs of the coefficients are not model independent which may potentially signal the presence of omitted variable bias or missing interaction terms.

GDP per capita growth is showing a relatively robust estimate across models, denoting that

higher per capita income may come with lower word count in reports. Debt service ratio is also relatively robust and infers that the larger the indebtedness of the member is, the longer the reports are, which may mean more conditions potentially imposed. Surprisingly, voting alignment with the US and China potentially lead to larger word counts, while import from the US and export to China both have a negative relationship with word count. In case of export to China, Model 4 shows that a 1% point larger shares in exports to China is associated with an $\exp(-0.014)=0.986$ times smaller mean word count.

Subsequently, electoral democracy is shown to have a large positive effect on word count, which is controversial with my expectations, along with participation in the Belt and Road Initiative. On the other hand, UNSC membership may denote crucial role of the members and signals a drop in word count. Regarding the Belt and Road Initiative, a possible explanation for larger loans but more conditions on average that participating countries are relatively diverse both in terms of demographics, economic situation and regimes, which causes dispersion in the results.

Sum sentence count The current specification uses Poisson regressions to investigate the relationship between assumed determinants and sentence count of IMF Program documents. Results of additional models of both the basic and the extended specifications can be found in the Appendix A, in Table A.12 and Table A.13.

The summarized results of the basic and extended specifications are presented in Table 4.4.

Model 1 starts off with the basic economic independent variables and Model 2-4 contain additional political and control variables. All coefficients in the models are statistically significant at the highest conventional level. The coefficients are not robust to changes in the model specifications which potentially flags problems.

The current specification is showing very similar results to the models on word count. This may potentially happen due to similar distribution of sentence counts across observations, denoting that the variation in word counts and sentence counts is similar.

Controlling for population and including electoral democracy lowers the amplitudes of the

coefficients in many cases, however, not all. Voting alignment with the US is not significant in any of the models, unlike the ones with word count.

4.2 Difference-in-Differences

The difference-in-Differences specification focuses on capturing the effects of quota share change caused by the 14th. This hopefully enables me to uncover and straighten up the effects which play a crucial role in estimating the three types of outcome variables. The means it works is that it internally conditions on pre-intervention characteristics in the data which I could most probably not do in the OLS section. I test the parallel trend assumption in order to verify whether the treatment is not endogenous to the change in untreated outcomes after the intervention. If the parallel trend assumption does not hold, it may be corrected somewhat by including a set of controls eliminating the endogenous variation in the treatment variable.

As I am conducting matching on the entire sample, including not just pre-treatment outcomes it helps me prepare a balances set of observations. Otherwise, had I matched on pre-treatment covariates, it would have been necessary to adjust the post-outcome section of the data as well, balancing out the cross section so that the same observations are contained across the whole data.

However, first, as I am comparing observations before and after the intervention, in order to isolate only the average treatment effect on the treated and nothing else, I need observations which are fairly similar to each other in all their other features across the two groups. This is to be tested by comparing covariate means in the two groups graphically.

Testing covariate balance I included the most important variables in the testing, those which were used in the regressions as well. See the means in the Appendix A in Table A.14 and Table A.15. To conclude the findings of the table, most of the means are fairly different from each other in the two groups, except for voting alignment with the USA and China and the BRI and UNSC binary variables. This indicates that the two groups are in nature different from each other. If I compared the average changes in the diff-in-diff setup using the

original dataset, I would get biased estimates. Therefore it is needed to to matching, where I conduct matching on the propensity score. Each observation receives a score based on the variables I am using for the matching to be based on. In this case the matching variables should be exogenous to the treatment variable, but still should be ones whose means differ significantly between the two groups.

4.2.1 Matching on the propensity score

For the matching I am using subsets of the original dataset, containing only the key variables needed in order to avoid losing too many observations due to missing values (as matching does not allow missing values in the data). I create a subset for the IMF program participation (as it contains more observations) and one for second-stage outcome variables (as they are a fraction of the data due to missing values in years where a country did not take part in a program.

I am utilizing variables for the matching that contain significant variation and explanatory effects, have a great coverage, show large difference in covariate means between the groups and can be assumed to be unrelated to the treatment. These are population, electoral democracy index and import from the US and China.

It became apparent that the data on IMF Program participation lacks common support, i.e. treated and untreated observations could not always be matched based on their propensity scores. Therefore I lost observations from the treated unit and ended up with 530 observations for the IMF program participation data and only 150 for loan size and word and sentence counts.

Figure A.6 in the Appendix A represents the mean differences in covariates in the data for IMF Program participation, while figure A.7 shows the same measures for matched and unmatched data for loan size, word and sentence count. The matching apparently eliminated large differences in means, at least in the variables used for the process of matching.

4.2.2 Parallel trend assumption

The main assumption for implementing a diff-in-diff setup is regarded as the parallel trend assumption. This refers to the notion that in the period before the intervention, outcome variables were affected by the same trends in both the treatment and the outcome groups. If this is the case I can assume that moving based on the same trends would have continued after the cutoff point as well, had the treatment group not been treated. At the same time it is also posited that the treatment is the only reason why the means of the groups diverge in the post-treatment period. It cannot be tested formally, but graphing the data may provide a basis for the assumption.

Looking at the data over the years I have found the assumption fulfilled for the IMF Program participation dependent variable, but not for the remaining ones. Figures visualizing the trends are presented in the Appendix A: Figure A.8 on program participation, Figure A.9 on loan size, Figure A.10 on word count and Figure A.11.

The assumption not holding is apparently a potential threat to the internal validity of the analysis (estimating ATET is endangered by being biased by different trends in the data). This means there may be different patterns in the two groups which are hard to find out. A possibly way for tackling it may be to control for endogenous variation in the change in the quota shares (reform variable, which is the treatment). As I have already used some of the potential variables for the matching and shall not include GDP related ones (as they may be part of the mechanism), I decided to use the remaining political variables. These (based on results from the previous section) may be affecting the rates of quota change and loan size/word count/sentence count parallel to each other.

4.2.3 Diff-in-diff results

Extended estimates of the model specifications are presented in the Appendix A in Table A.16 and Table A.17. The summary table of all specifications can be found below in Table 4.5.

Model 5 This model is using the matched data for IMF Program participation, with 530 observations.

The binary variable denoting time periods is showing statistically significant results on 90% significance level. It refers to the average difference in the average rate of program participation between the periods before and after the intervention, among those members in the control group. It denotes a positive change among the untreated, meaning that jumping from the period before the intervention to the one after the intervention is associated with a 1.344 times larger difference in chance for program participation on average, among the untreated members.

For years of participation, the coefficient estimate has a 99% significance level. It may be interpreted as follows: A one year larger average 5-year participation is associated with an almost 3-times larger difference in the chance for program participation, on average.

Model 6 Model 6's estimates are all significant at least at 90% significance levels. Most importantly, the coefficient of the difference in differences estimator does not seem to be model dependent across model specifications, after including controls it remains the same, with the same standard errors. I am comparing differences in changes in the mean loan sizes between the treatment and control groups, before and after the Quota Reform. mean difference between the difference of treatment and controls group mean loan sizes. It equals to -0.826 which means that the average difference in mean loan sizes are 0.438-times smaller between the treatment and control groups when we jump from the pre-treatment to the post-treatment period.

The voting alignment controls and BRI participation show a tendency to reduce differences in loan sizes.

Model 7 The word count model presents statistically significant results on the highest conventional significance level, with the estimate of the DiD estimator being stable across specifications. It predicts a negative average change in difference in word count of reports between control and treatment groups, when switching between pre-treatment and post-

treatment periods. The amplitudes of predicted effects are smaller than in the model on loan size, but are mostly similar.

The second part of the model on conditionality, focusing on sentence counts gives comparable results as the first part of the model, both in amplitudes and significance. The coefficient and standard error produced by the diff-in-diff estimator remain stable after adding controls.

A factor potentially causing concerns is the small sample size of models 6 and 7. This is not exactly suitable for producing highly robust results, despite all efforts to be methodologically precise and reliable.

		Dependent	variable:	
		Loan	size	
	(1)	(2)	(3)	(4)
Log GDP/pc	1.330^{***} (0.005)			
$GDP/cap \ gr$		-0.139^{***} (0.001)	0.011^{***} (0.001)	-0.019^{***} (0.001)
St debt to total		0.075^{***} (0.0003)	~ /	× ,
Trade bal.		0.075^{***} (0.0003)		
Reserves	-0.165^{***} (0.002)	0.080^{***} (0.001)	0.192^{***} (0.001)	0.082^{***} (0.003)
Debt s. ratio	0.010^{***} (0.0002)		0.019^{***} (0.0002)	-0.014^{***} (0.001)
Yrs of particip.	-0.219^{***} (0.003)	0.567^{***} (0.003)		-0.067^{***} (0.006)
Inflation	0.027^{***} (0.0002)	0.004^{***} (0.0002)		
El. democracy				2.142^{***}
log population	0.966^{***}	1.476^{***}		(0.039) 0.304^{***} (0.008)
UNSC membership	(0.000)	(0.002)		(0.000) 0.224^{***} (0.011)
Quotashare	0.467^{***} (0.006)		6.193^{***} (0.015)	8.261^{***} (0.061)
Mean v. c. US			-1.026^{***} (0.015)	1.096^{***} (0.059)
Ex to US			1.633^{***} (0.007)	2.883^{***} (0.089)
IM from US			-1.746^{***} (0.007)	6.004^{***} (0.079)
Share of aid			-3.616^{***} (0.150)	-6.953^{***} (0.239)
Mean v. c. China				0.953^{***} (0.088)
EX to China				-0.089^{***} (0.031)
IM from China				-3.515^{***} (0.055)
BRI part.				0.098^{***} (0.012)
Constant	-19.465^{***} (0.079)	-21.931^{***} (0.051)	4.165^{***} (0.010)	(0.163)
Observations Akaike Inf. Crit.	370 Inf.000	345 Inf.000	324 Inf.000	248 Inf.000
Note:			*p<0.1; **p<0	0.05; *** p<0.01

Table 4.2: Summary results on loan size

		Dependen	t variable:	
		Sum wor	rd count	
	(1)	(2)	(3)	(4)
Log GDP/cap.	-0.160^{***} (0.0003)	-0.071^{***} (0.0004)		
GDP/cap gr			-0.025^{***} (0.0001)	-0.023^{***} (0.0001)
Reserves	0.036^{***} (0.0001)	$\begin{array}{c} 0.019^{***} \\ (0.0001) \end{array}$	-0.018^{***} (0.0002)	-0.016^{***} (0.0002)
Debt s. ratio	$\begin{array}{c} 0.015^{***} \\ (0.00002) \end{array}$	0.012^{***} (0.00002)	0.008^{***} (0.00002)	0.007^{***} (0.00002)
Quotashare	0.005^{***} (0.001)	-0.237^{***} (0.001)	1.090^{***} (0.004)	1.039^{***} (0.005)
Yrs of particip.		$\begin{array}{c} 0.133^{***} \\ (0.0002) \end{array}$		0.133^{***} (0.0003)
Inflation		0.009^{***} (0.00003)		
El. democracy				0.493^{***} (0.002)
log population		0.026^{***} (0.0002)		0.077^{***} (0.0004)
UNSC membership				-0.034^{***} (0.002)
Mean v. c. US			0.094^{***} (0.004)	0.072^{***} (0.004)
Ex to US			-0.017^{**} (0.007)	0.179^{***} (0.007)
IM from US			-1.155^{***} (0.007)	-1.492^{***} (0.008)
Share of aid			3.623^{***} (0.016)	$2.401^{***} \\ (0.019)$
Mean v. c. China			$\begin{array}{c} 0.174^{***} \\ (0.006) \end{array}$	0.104^{***} (0.006)
EX to China			-0.296^{***} (0.002)	-0.114^{***} (0.002)
IM from China			0.195^{***} (0.004)	-0.092^{***} (0.004)
BRI part.			0.106^{***} (0.001)	0.181^{***} (0.001)
Constant	$\frac{11.598^{***}}{(0.002)}$	10.043^{***} (0.005)	10.600^{+++} (0.005)	8.616^{***} (0.009)
Observations Akaike Inf. Crit.	332 4,243,782.000	332 3,859,339.000	229 2,551,275.000	224 2,184,853.000

Table 4.3: Summary	results on	word count
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*p<0.1; **p<0.05; ***p<0.01

		Dependent	variable:	
		Sum sente:	nce count	
	(1)	(2)	(3)	(4)
Log GDP/cap.	-0.189^{***} (0.002)	-0.095^{***} (0.002)		
GDP/cap gr			-0.027^{***} (0.0005)	-0.025^{***} (0.0005)
Reserves	0.034^{***} (0.001)	0.016^{***} (0.001)	-0.019^{***} (0.001)	-0.017^{***} (0.001)
Debt s. ratio	0.015^{***} (0.0001)	0.013^{***} (0.0001)	0.008^{***} (0.0001)	0.008^{***} (0.0001)
Quotashare	-0.050^{***} (0.006)	-0.309^{***} (0.007)	0.945^{***} (0.023)	0.859^{***} (0.026)
Yrs of particip.		0.141^{***} (0.001)		0.136^{***} (0.002)
Inflation		0.010^{***} (0.0002)		
El. democracy				0.483^{***} (0.013)
log population		0.026^{***} (0.001)		0.085^{***} (0.002)
UNSC membership				$egin{array}{c} -0.063^{***} \ (0.010) \end{array}$
Mean v. c. US			$0.011 \\ (0.022)$	$0.002 \\ (0.024)$
Ex to US			-0.172^{***} (0.041)	$0.033 \\ (0.042)$
IM from US			-1.135^{***} (0.041)	-1.456^{***} (0.043)
Share of aid			3.921^{***} (0.090)	2.578^{***} (0.102)
Mean v. c. China			0.098^{***} (0.032)	$0.028 \\ (0.034)$
EX to China			-0.305^{***} (0.012)	-0.114^{***} (0.012)
IM from China			0.285^{***} (0.020)	-0.031 (0.022)
BRI part.			0.014^{***} (0.005)	0.091^{***} (0.005)
Constant	8.382^{***} (0.013)	6.744^{***} (0.029)	7.274^{***} (0.030)	5.152^{***} (0.052)
Observations Akaike Inf. Crit.	332 143,726.400	332 130,032.900	229 88,550.870	224 75,995.160

Table 4.4. Summary results on sentence cou	Summary results on set	ntence count
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	Dependent variable:					
	Program part.	Loan size	Word count	Sentence count		
	logistic	Poisson	Poisson	Poisson		
	(1)	(2)	(3)	(4)		
Reform	0.252	2.556***	0.263***	0.229***		
	(0.729)	(0.021)	(0.001)	(0.005)		
Time dummy	1.344*	0.423***	0.179***	0.190***		
·	(0.817)	(0.032)	(0.001)	(0.007)		
DiD estimator	-0.369	-0.826^{***}	-0.258^{***}	-0.275^{***}		
	(1.140)	(0.032)	(0.001)	(0.008)		
Yrs of particip.	2.932***		0.017^{***}	0.015***		
	(0.381)		(0.0005)	(0.003)		
Mean v. c. US	0.682	-0.748^{***}	-0.390^{***}	-0.398^{***}		
	(3.523)	(0.057)	(0.005)	(0.025)		
Mean v. c. China	1.578	-2.846^{***}	-0.413***	-0.517^{***}		
	(5.094)	(0.084)	(0.007)	(0.037)		
UNSC membership	-0.473	1.275***	-0.036^{***}	-0.086***		
-	(1.204)	(0.013)	(0.002)	(0.012)		
BRI part.	-0.417	-0.026^{*}	0.089***	0.028***		
-	(0.748)	(0.014)	(0.001)	(0.006)		
Constant	-10.041^{**}	6.332***	11.132***	7.816***		
	(4.948)	(0.082)	(0.007)	(0.038)		
Observations	530	150	150	150		
Akaike Inf. Crit.	118.942	Inf.000	2,086,239.000	72,715.950		

Table 4.5: Summary results on DiD

Note:

*p<0.1; **p<0.05; ***p<0.01

Chapter 5

Discussion

The main purpose of this section includes reflecting on the results in the context of the existing literature, emphasizing and contrasting new findings as well as put the analysis in an extended framework.

Significance of the results of this study The largest accomplishment of the current study lays in three factors. First, it uses an updated, unique dataset compiled by me. This current of data have not been used, the most recent publications on this topic were published four years ago the latest, using older data or data sets of earlier projects and publications, utilizing their features to discover new questions (Guimaraes and Ladeira, 2017; Sturm, Dreher and Vreeland, 2013; Oberdabernig, 2018; Stone, 2008).

Additionally, second, this study examines the emerging role of a powerful member, that has not been studied in the literature before at all. This has also to do with the current events that made this question relevant for further scrutiny. As the role of the US has longstanding focus on it in studies, recent developments in the relative position of China in the Fund has made it worth to be investigated in similar ways the US used to be. For this I researched and added variables that have been frequently used at measuring the impacts of US relations. Moreover, the complete set of variables included was slightly different then for the US in the end, as China is not reporting as comprehensively and reliably as the US. Therefore it was impossible to obtain data for some features (e.g. international aid disbursed, bank exposure), but it was possible to obtain other types of variables, e.g. the Belt and Road Initiative, which is comprehensive and recent (ongoing) enough to have a perceived effect similar to those variables that could not be added. Reasons for including and focusing on China in this analysis can be found in the Theory and Hypotheses part 2.1.

Third, the current analysis utilizes a powerful, yet undiscovered tool: text mined data. IMF reports have so far been mostly and widely used by professionals, policy-makers and the readers by reading and processing it manually. The possibility for fast and comprehensive extraction as well as processing of information has arisen by the expansion of software-based text analysis methods that was used by Mihalyi and Mate, 2018 as well. Providing a thorough overview of multiple hundreds of documents without reading them one by one is able to create significant scientific value, if done properly.

The attempt to predict participation in IMF programs unfortunately did not result in significant estimates, except in case of "path dependency", the measure focusing on previous and recent history with IMF programs. This is significant in case of all other outcome variables as well, having relatively large and positive estimated effects, as expected.

Quota shares turned out to be significant factors explaining loan size and word and sentence counts. However, their role may rather be considered as constraints, not primary determinants of loan size and conditionality. The primary determinants proved to be the ones frequently used in the literature, denoting economic instability, fragile political environment, poor access to external capital and other markets.

However, findings denote that political variables also play a crucial role in loan size and perceived conditionality outcomes. Although voting alignment with China and the US have showed ambiguous and slightly controversial implications, these may be driven by the lack of decomposition in arrangement types (non-concessional or concessional). Economic proximity (based on trade with the two countries) proved to have significant explanatory powers on the quantitative outcomes, across specifications, remaining relatively stable. The same goes for BRI and UNSC participation as well, but with smaller magnitude and the same problem of lack of decomposition.

Quota shares turn out to be key factors when considering the effect or the 14th Quota Reform on outcomes. Based on estimates of the models, the Reform has significant effects on loan sizes, word and sentence counts and reduces the gap between treatment and control groups in terms of mean loan sizes and length of reports.

Recent trends Estimates of the current study may be different from those in the literature also because the relative importance of variables has changed over time, associated with changes in the World economy. One possibility is, for instance that as trade and capital market liberalization has been taking place in the last decades, it shifts the significance of indebtedness and other economic variables in the analysis. The reason for that may be that members have easier access to international markets, therefore the role of the IMF as Lender of last resort is not so crucial anymore. However, it is also possible that this phenomenon in practice does not reduce the chance for a member to borrow from the Fund, rather the opposite. Easier access may even be an incentive to seek financing irresponsibly as long as macroeconomic indicators allow for it.

Decomposition of the results based on arrangement type would also be crucial as it could potentially take into account shifts in the ratio between concessional and non-concessional borrowings from the Fund. Along with the Fund's motivations to provide concessional financing options, its profile is also changing, which may be underpinned by the trends behind which types of "customers" it should focus more on.

There are features of this study that could not be refined or utilized in-depth, either due to severe time and space constraints or methodological limitations. I failed to produce and add interaction terms of the quota share variable to the OLS analyses, moreover a two-staged Heckman-selection model on the dependent variables could have made a large difference in refining the identification strategy by conditioning on the first outcome variable. Also due to time constraints I was not able to check the robustness of the results of this analysis and check the goodness-of-fit of the model specifications. However, I conducted the included analyses after thorough and careful considerations of the implications of the models.

5.1 Policy implications

Evaluation of China's hidden influence in the Fund Including China among the leading members of the Fund may have multiple implications that are worth considering for the Fund. Obvious and straightforward evaluations may not consider this act as potentially problematic, as the strong Western dominance and the formal frameworks for decision-making still remain in the Fund. However, as the results of this analysis imply, political factors may play a hidden role in the background. Providing China with larger influence also leads to larger independence in actions and power in the decision-making.

Carefully evaluating this could be a potentially important step from the Fund.

Example set Building on the previous argument, following the example of China, quota shares alignment may follow for additional emerging economies as well, according to changes in the weights of countries in the World economy. The case of China may create a precedent for further emerging countries and a basis for potential negotiations, in which process certain privileges of the US and EU might get lost. Setting boundaries and being transparent and consequent about Fund policies is crucial in preparing for potential internal and interest conflicts.

Reconsidering lender of last resort Parallel to liberalization in the World economy, the Fund's lender of last resort role might need to be adjusted. Offering concessional financing for the least developed has already been a step towards some transition in the Fund. Setting up a more straightforward and consequent financing portfolio might set targets and conditions straight. Re-evaluating demand for all types of financing might also be necessary in order to adjust and decide about keeping or abolishing the role of lender of last resort.

Chapter 6 Conclusions

The current study aims to fill a niche in the literature by studying the effect of China's emerging role in the Fund on IMF Program participation outcomes, loan size and word/sentence counts of IMF programs documents referring to member countries. It also utilizes a powerful tool: text mined data. IMF reports have so far been mostly and widely used by professionals, policy-makers and the readers by reading and processing it manually. Its additional purpose is to estimate the effect of the 14th General Quota Reform on the same outcomes.

Findings of the analysis do not underpin the significance of explanatory variables on chances for program participation, except in the case of previous history with the Fund. However, I find statistically significant effects of quota shares, economic and political variables on all second-stage outcomes (loan size, word/sentence counts), both in the OLS and the DiD models. In addition, the effect of the quota reform proved to be significant on loan size and word/sentence counts, lowering them for those affected by the quota share changes.

I compiled a unique data set on recent yearly data, consisting of variables referring to the major hypotheses in the literature, in order to test my main research questions, . It covers the period of 2011 and 2019 and includes 2038 country-year pairs as observations.

First-stage methods utilized the cross-section data by running logit and Poisson regressions in separate models on the dependent variables. After evaluating the explanatory power of the selected explanatory variables, along with the general role of quota shares in funding outcomes, I use changes in quota shares to infer the effects of the quota changes during the 14th Quota Reform. In order to conduct the Difference-in-Differences analysis, first matching was needed. Limitations of this study There are features of this study that could not be refined or utilized in-depth, either due to severe time and space constraints or methodological limitations. These include robustness checks, additional, more sophisticated models (e.g. Heckman selection model). In addition, it would be important to decompose effects based on arrangement types, as well as use panel data with more observations. However, the data was specifically compiled for the purpose of studying the two research questions which resulted in the relatively short time period.

Policy implications and final remarks To sum up, this paper poses three primary recommendations. First, based on the results of this analysis, political factors may play a significant role in the background. Providing China with larger influence subsequently leads to larger independence in its actions and power in the decision-making. Carefully evaluating this could be a potentially important step from the Fund. This argument leads to the second implication: following the example of China, quota share alignment may follow for additional emerging economies as well in the future, based on changes in the World economy. The case of China may create a precedent for further emerging countries and a basis for potential negotiations. Setting boundaries and being transparent and consequent about Fund policies is crucial in preparing for potential internal and interest conflicts. Third, parallel to liberalization in the World economy, the Fund's lender of last resort role might need to be adjusted. Offering concessional financing for the least developed has already been a step towards some transition in the Fund. Setting up a more straightforward and consequent financing portfolio might set targets and conditions straight. Re-evaluating demand for all types of financing might also be necessary in order to adjust and decide about keeping or abolishing the role of lender of last resort.

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Appendix A

Appendix

A.1 Additional figures, tables and information

	Average yearly loansize	Token count in program documents	Sentence count in program documents	FDI	Short-term to total debt	Debt s. ratio	Reserves
Min.	0.00000	10862	303	-40.41425184	0	0.003270613	0.027084324
1st Quantile	13.32688	26388.75	823.25	1.103077991	3.7944	4.310418073	2.226086623
Median	62.55708	41757	1332.5	2.559233447	10.9666	8.888228207	3.98222366
Mean	1330.96954	52056.28395	1659.740741	5.208897256	13.13415059	12.43586886	4.970170115
3rd Quantile	336.75000	64000.25	2076	4.735914767	20.67035	15.35451677	6.310042548
Max.	44563.50000	358068	12022	280.1318331	84.366	133.0848126	79.23721827
NA's	1496.00000	1552	1552	55	767	851	286

Table A.1: Summary statistics of numeric variables I.

Table A.2: Summary statistics of numeric variables II.

	Trade balance	Inflation	GDP per capita growth	Log population	Log GDP per capita	Quota share	Population
Min.	-126.4726724	-26.70028458	-62.37807684	9.216024188	5.337897279	0.00052	10057
1st Quantile	-12.461915	1.122611692	0.483832728	14.85402121	7.464568099	0.035	2825006.5
Median	-2.691543106	2.749255971	2.13814449	16.19447711	8.579756836	0.113	10793757
Mean	-5.790187996	5.921236238	2.017012761	15.91762087	8.600854922	0.577696457	39504539.11
3rd Quantile	2.799945109	6.828167093	3.592769543	17.50056872	9.776090401	0.445	39847440
Max.	48.45214614	75.27736917	121.7795426	21.0581046	11.61767758	17.66	1397715000
NA's	169	42	42	8	48	0.00052	8

	GDP per capita	Average years of participation	Mean voting count with US	Mean voting count with China	Electoral democracy index	Import from US	Export to US
Min.	208.0747269	0	0.098360656	0.157894737	0.015	0	0
1st Quantile	1745.101675	0	0.224806202	0.614130435	0.288	0.0039	0.0011
Median	5322.81166	0	0.348484848	0.729095184	0.542	0.0233	0.0166
Mean	13224.05877	1.460972018	0.371441347	0.705364513	0.534304558	0.590682638	0.625587062
3rd Quantile	17607.67973	3	0.49122807	0.79375	0.767	0.2416	0.2167
Max.	111043.5317	5	0.949612403	0.959016393	0.919	19.2853	21.8588
NA's	48	1	109	206	173	287	353

Table A.3: Summary statistics of numeric variables III.

Table A.4: Summary statistics of numeric variables IV.

	Import from China	Export to China	Share of aid
Min.	0	0	-0.000517626
1st Quantile	0.01605	0.0027	3.05669E-05
Median	0.084	0.0283	0.000579253
Mean	0.552473729	0.752438247	0.003740547
3rd Quantile	0.2736	0.231	0.002906287
Max.	19.2325	11.1603	0.241248342
NA's	287	281	90

Table A.5: Frequencies and percentages of concessional loan participation (1 = concessional)

	Concessional loan freq.	Perc. of total (only program participants)	Perc. of total (including NAs)
0	313	57.75	15.36
1	229	42.25	11.24
NA	1496		73.41
Total	2038	100	100



Figure A.1: Overview of missing values in percentage.



Figure A.2: Correlation between numeric variables.



Figure A.3: Distribution of average yearly loansize



Figure A.4: Distribution of sum word count for IMF Program documents



Figure A.5: Distribution of sum sentence count for IMF Program documents



Figure A.6: Covariate mean balance following matching (data for program participation)

	Dependent variable: IMF program participation			
	(1)	(2)	(3)	(4)
GDP/pc gr	-0.043^{**} (0.019)	-0.003 (0.038)		
Reserves	-0.029 (0.019)	0.001 (0.044)		
Debt s. ratio	0.010^{**} (0.005)			
Avg. yrs of particip.		2.986^{***} (0.251)		2.976^{***} (0.272)
Quotashare			-0.530^{***} (0.079)	0.241 (0.253)
log population			-0.013^{***} (0.005)	0.012 (0.015)
Log GDP/pc			-0.021^{***} (0.006)	-0.029 (0.022)
Trade balance			-0.037^{***} (0.008)	0.001 (0.022)
ST debt to total debt	-0.491^{***} (0.175)	-0.822 (0.788)	(0.000) -0.084 (0.152)	(1.090)
Inflation	-0.415^{***} (0.134)	-8.317^{***} (0.788)	$\begin{array}{c} 4.031^{***} \\ (0.626) \end{array}$	-9.676^{***} (2.118)
Observations Akaike Inf. Crit.	$1,064 \\ 1,359.210$	1,743 225.829	$1,143 \\ 1,372.974$	$1,143 \\ 200.796$
Note:			*p<0.1; **p<0.	.05; ***p<0.01

Table A.6: Logit baseline results

		De	ependent variable	:	
-		IMF p	rogram participa	ation	
	(1)	(2)	(3)	(4)	(5)
Log GDP/pc	-0.874^{***}	0.055	-0.719^{***}	0.307	0.211
0 / 1	(0.114)	(0.392)	(0.111)	(0.437)	(0.336)
Reserves	-0.049^{*}	0.099	-0.029	-0.008	0.040
	(0.029)	(0.104)	(0.026)	(0.137)	(0.098)
Debt s. ratio	0.023***	0.004	0.017**	-0.002	0.004
	(0.007)	(0.026)	(0.007)	(0.030)	(0.021)
Quotashare	-2.290***	-2.223	0.073	-5.502	-1.521
·	(0.651)	(2.500)	(0.874)	(3.573)	(1.116)
Yrs of particip.	· · · ·	2.945***	× ,	3.179***	2.987***
1 1		(0.323)		(0.403)	(0.302)
log population		-0.006		0.074	
011		(0.260)		(0.288)	
UNSC mship		· · · ·		()	-0.211
1					(1.079)
El. democracy		-0.492			0.128
0		(1.593)			(1.487)
Mean v. c. US	4.063^{***}	-0.484			
	(0.689)	(1.919)			
Ex to US	-1.168^{*}	-0.141			
	(0.628)	(2.265)			
IM from US	2.172***	0.326			
	(0.630)	(1.959)			
Share of aid	39.930***	-15.867^{*}			
	(14.122)	(8.325)			
Mean v. c. China		()	-2.510^{**}	-0.097	
			(1.077)	(3.249)	
EX to China			-1.742^{**}	0.344	
			(0.746)	(0.891)	
IM from China			-0.669	0.699	
			(0.754)	(1.982)	
BRI particip.			0.031	0.001	
			(0.210)	(0.632)	
Constant	4.799^{***}	-8.405	7.024***	-11.815	-10.195^{***}
	(0.824)	(6.176)	(1.230)	(7.257)	(2.511)
Observations	870	815	664	664	Q44
Akaike Inf Crit	941 172	164 009	791 711	134 951	167525
	571.112	101.003	101.111	101.001	101.020
Note:				*p<0.1; **p<0	.05; ***p<0.01

Table A.7: Logit extended results

	Dependent variable:			
_				
	(1)	(2)	(3)	(4)
Log GDP/pc	0.685***		1.330***	
- , -	(0.004)		(0.005)	
Reserves	0.062***		-0.165^{***}	0.080***
	(0.001)		(0.002)	(0.001)
Debt s. ratio	0.020***		0.010***	
	(0.0001)		(0.0002)	
Yrs of particip.			-0.219^{***}	0.567^{***}
			(0.003)	(0.003)
Quotashare	2.004^{***}		0.467^{***}	
	(0.004)		(0.006)	
GDP/cap gr		-0.028^{***}		-0.139^{***}
		(0.0003)		(0.001)
St debt to total		0.084^{***}		0.075^{***}
		(0.0001)		(0.0003)
Trade bal.		0.079^{***}		0.075^{***}
		(0.0001)		(0.0003)
Inflation		0.010^{***}	0.027^{***}	0.004^{***}
		(0.0001)	(0.0002)	(0.0002)
log population			0.966***	1.476^{***}
			(0.003)	(0.002)
Constant	-0.255^{***}	6.619^{***}	-19.465^{***}	-21.931^{***}
	(0.029)	(0.003)	(0.079)	(0.051)
Observations	370	440	370	345
Akaike Inf. Crit.	Inf.000	Inf.000	Inf.000	Inf.000
Note:			*p<0.1; **p<0.05; ***p<0.01	

Table A.8: Poisson results on loan size

	Dependent variable: Loan size		
-			
	(1)	(2)	(3)
GDP/cap gr	0.011***	-0.014^{***}	-0.019^{***}
	(0.001)	(0.001)	(0.001)
Reserves	0.192^{***}	0.005	0.082^{***}
	(0.001)	(0.003)	(0.003)
Debt s. ratio	0.019^{***}	-0.013^{***}	-0.014^{***}
	(0.0002)	(0.0005)	(0.001)
Quotashare	6.193^{***}	8.602***	8.261***
	(0.015)	(0.052)	(0.061)
Mean v. c. US	-1.026^{***}	1.452^{***}	1.096^{***}
	(0.015)	(0.055)	(0.059)
Ex to US	1.633^{***}	3.502^{***}	2.883^{***}
	(0.007)	(0.090)	(0.089)
IM from US	-1.746^{***}	4.970^{***}	6.004^{***}
	(0.007)	(0.072)	(0.079)
Share of aid	-3.616^{***}	-3.141^{***}	-6.953^{***}
	(0.150)	(0.207)	(0.239)
Mean v. c. China		1.848^{***}	0.953^{***}
		(0.087)	(0.088)
EX to China		-0.278^{***}	-0.089^{***}
		(0.032)	(0.031)
IM from China		-2.568^{***}	-3.515^{***}
		(0.049)	(0.055)
BRI part.		0.102^{***}	0.098^{***}
		(0.011)	(0.012)
Yrs of particip.			-0.067^{***}
			(0.006)
El. democracy			2.142^{***}
			(0.039)
log population			0.304^{***}
			(0.008)
UNSC membership			0.224^{***}
			(0.011)
Constant	4.165^{***}	2.348^{***}	-2.801^{***}
	(0.010)	(0.080)	(0.163)
Observations	324	255	248
Akaike Inf. Crit.	Inf.000	Inf.000	Inf.000
 N/		* <0.1 ** .0	05. *** -0.01
Note:		p<0.1; ^{**} p<0.	.05; ****p<0.01

Table A.9: Extended results on loan size
	Dependent variable:				
	Sum word count				
	(1)	(2)	(3)	(4)	
Log GDP/pc	-0.160^{***}		-0.071^{***}		
	(0.0003)		(0.0004)		
Reserves	0.036^{***}		0.019^{***}	-0.024^{***}	
	(0.0001)		(0.0001)	(0.0002)	
Debt s. ratio	0.015^{***}		0.012^{***}		
	(0.00002)		(0.00002)		
Quotashare	0.005^{***}		-0.237^{***}		
	(0.001)		(0.001)		
GDP/cap gr		-0.029^{***}		-0.033^{***}	
		(0.0001)		(0.0001)	
St debt to total		-0.007^{***}		-0.001^{***}	
		(0.00003)		(0.00003)	
Trade bal.		-0.0001^{***}		0.001^{***}	
		(0.00002)		(0.00002)	
Yrs of particip.			0.133^{***}	0.155^{***}	
			(0.0002)	(0.0002)	
Inflation		0.002^{***}	0.009^{***}	0.008^{***}	
		(0.00003)	(0.00003)	(0.00004)	
log population			0.026^{***}	-0.024^{***}	
			(0.0002)	(0.0002)	
Constant	11.598^{***}	10.920^{***}	10.043^{***}	10.636^{***}	
	(0.002)	(0.0005)	(0.005)	(0.003)	
Observations	332	389	332	317	
Akaike Inf. Crit.	4,243,782.000	$5,\!552,\!537.000$	3,859,339.000	$3,\!895,\!159.000$	
Note:			*p<0.1; **p<	<0.05; ***p<0.01	

Table A.10: Baseline results on word count

*p<0.1; **p<0.05; °p<0.01

	Dependent variable:				
		Sum word count			
	(1)	(2)	(3)		
GDP/cap gr	-0.030***	-0.025^{***}	-0.023***		
	(0.0001)	(0.0001)	(0.0001)		
Reserves	-0.034^{***}	-0.018^{***}	-0.016^{***}		
	(0.0002)	(0.0002)	(0.0002)		
Debt s. ratio	0.006***	0.008^{***}	0.007^{***}		
	(0.00002)	(0.00002)	(0.00002)		
Quotashare	0.768^{***}	1.090^{***}	1.039^{***}		
	(0.002)	(0.004)	(0.005)		
Mean v. c. US	0.047^{***}	0.094^{***}	0.072^{***}		
	(0.002)	(0.004)	(0.004)		
Ex to US	0.054^{***}	-0.017^{**}	0.179^{***}		
	(0.003)	(0.007)	(0.007)		
IM from US	-0.170^{***}	-1.155^{***}	-1.492^{***}		
	(0.003)	(0.007)	(0.008)		
Share of aid	4.367^{***}	3.623^{***}	2.401^{***}		
	(0.015)	(0.016)	(0.019)		
Mean v. c. China		0.174^{***}	0.104^{***}		
		(0.006)	(0.006)		
EX to China		-0.296^{***}	-0.114^{***}		
		(0.002)	(0.002)		
IM from China		0.195^{***}	-0.092^{***}		
		(0.004)	(0.004)		
BRI part.		0.106^{***}	0.181^{***}		
		(0.001)	(0.001)		
Yrs of particip.			0.133^{***}		
			(0.0003)		
El. democracy			0.493^{***}		
			(0.002)		
log population			0.077^{***}		
			(0.0004)		
UNSC membership			-0.034^{***}		
			(0.002)		
Constant	10.806^{***}	10.600^{***}	8.616***		
	(0.001)	(0.005)	(0.009)		
Observations	301	229	224		
Akaike Inf. Crit.	3,453,057.000	2,551,275.000	2,184,853.000		
Note:		*p<0.1; **p<0.05; ***p<0.01			

Table A.11: Extended results on word count

	Dependent variable:				
	Sum sentence count				
	(1)	(2)	(3)	(4)	
Log GDP/pc	-0.189^{***}		-0.095^{***}		
	(0.002)		(0.002)		
Reserves	0.034***		0.016***	-0.033^{***}	
	(0.001)		(0.001)	(0.001)	
Debt s. ratio	0.015***		0.013***	× ,	
	(0.0001)		(0.0001)		
Quotashare	-0.050^{***}		-0.309^{***}		
	(0.006)		(0.007)		
GDP/cap gr		-0.030^{***}		-0.034^{***}	
·		(0.0003)		(0.0004)	
St debt to total		-0.009^{***}		-0.001^{***}	
		(0.0002)		(0.0002)	
Trade bal.		-0.0004^{***}		0.001^{***}	
		(0.0001)		(0.0001)	
Yrs of particip.			0.141^{***}	0.168^{***}	
			(0.001)	(0.001)	
Inflation		0.002***	0.010^{***}	0.008^{***}	
		(0.0002)	(0.0002)	(0.0002)	
log population			0.026^{***}	-0.034^{***}	
			(0.001)	(0.001)	
Constant	8.382***	7.483***	6.744^{***}	7.343***	
	(0.013)	(0.003)	(0.029)	(0.019)	
Observations	332	389	332	317	
Akaike Inf. Crit.	143,726.400	186,566.600	130,032.900	132,064.200	
Note:			*p<0.1; **p<0	0.05; ***p<0.01	

Table A.12: Baseline results on sentence count

	Dependent variable:			
	Su	im sentence coun	t	
	(1)	(2)	(3)	
GDP/cap gr	-0.033^{***}	-0.027^{***}	-0.025^{***}	
	(0.0004)	(0.0005)	(0.0005)	
Reserves	-0.040^{***}	-0.019^{***}	-0.017^{***}	
	(0.001)	(0.001)	(0.001)	
Debt s. ratio	0.007^{***}	0.008***	0.008***	
	(0.0001)	(0.0001)	(0.0001)	
Quotashare	0.610***	0.945***	0.859***	
•	(0.013)	(0.023)	(0.026)	
Mean v. c. US	0.047^{***}	0.011	0.002	
	(0.012)	(0.022)	(0.024)	
Ex to US	0.060***	-0.172^{***}	0.033	
	(0.018)	(0.041)	(0.042)	
IM from US	-0.170^{***}	-1.135^{***}	-1.456^{***}	
	(0.015)	(0.041)	(0.043)	
Share of aid	4.736***	3.921***	2.578***	
	(0.085)	(0.090)	(0.102)	
Mean v. c. China		0.098***	0.028	
		(0.032)	(0.034)	
EX to China		-0.305^{***}	-0.114^{***}	
		(0.012)	(0.012)	
IM from China		0.285***	-0.031	
		(0.020)	(0.022)	
BRI part.		0.014***	0.091***	
		(0.005)	(0.005)	
Yrs of particip.			0.136***	
			(0.002)	
El. democracy			0.483^{***}	
			(0.013)	
log population			0.085^{***}	
			(0.002)	
UNSC membership			-0.063^{***}	
			(0.010)	
Constant	7.411^{***}	7.274^{***}	5.152^{***}	
	(0.006)	(0.030)	(0.052)	
Observations	301	229	224	
Akaike Inf. Crit.	119,874.000	88,550.870	75,995.160	
Note:		*p<0.1; **p<0	0.05; ***p<0.01	

Table A.13: Extended results on sentence count

Table A.14: Means of covariates in the treatment and control groups

reform	gdppc	$gdppc_gr$	res_im	$debts_ratio$	pop	avg_part_yr	$\rm meanv_US$	meanv_CHN
0	1741.568972	2.32523987	3.296249143	7.554309819	23086336.41	2.288643533	0.289204861	0.756775453
1	18239.87561	1.881036759	5.605469255	16.90013334	46841825.7	1.086956522	0.409382271	0.681547944

Table A.15: Means of covariates in the treatment and control groups II.

reform	el_democr	EX_toUS	IM_fromUS	EX_toCHN	IM_fromCHN	BRI_part	unsc
0	0.387773096	0.020270623	0.022617282	0.041987767	0.072719806	0.231800766	0.014376997
1	0.606748397	0.891285312	0.827376537	1.047029227	0.752371197	0.311578947	0.084732824



Figure A.7: Covariate mean balance following matching (data for loan size and word/sentence count)



Figure A.8: Mean program participation over time for parallel trend assumption



Figure A.9: Mean average loan size over time for parallel trend assumption



Figure A.10: Mean word counts over time for parallel trend assumption



Figure A.11: Mean sentence counts over time for parallel trend assumption

	Dependent variable:				
_	Program	n part.	Loan size		
	logistic		Poiss	on	
	(1)	(2)	(3)	(4)	
Reform	-1.352^{***}	0.252	2.787***	2.556^{***}	
	(0.233)	(0.729)	(0.020)	(0.021)	
Time dummy	-0.539^{**}	1.344*	0.539***	0.423***	
-	(0.257)	(0.817)	(0.031)	(0.032)	
DiD estimator	0.838**	-0.369	-0.827^{***}	-0.826^{***}	
	(0.375)	(1.140)	(0.032)	(0.032)	
Yrs of particip.		2.932***			
		(0.381)			
Mean v. c. US		0.682		-0.748^{***}	
		(3.523)		(0.057)	
Mean v. c. China		1.578		-2.846^{***}	
		(5.094)		(0.084)	
UNSC membership		-0.473		1.275***	
		(1.204)		(0.013)	
BRI part.		-0.417		-0.026^{*}	
-		(0.748)		(0.014)	
Constant	0.435^{***}	-10.041^{**}	3.881^{***}	6.332***	
	(0.158)	(4.948)	(0.020)	(0.082)	
Observations	530	530	150	150	
Akaike Inf. Crit.	694.021	118.942	Inf.000	Inf.000	
Note:			*p<0.1; **p<0.	.05; ***p<0.01	

Table A.16: Results on DiD, participation and loan size

	Dependent variable:				
	Word	count	Sentence	e count	
	(1)	(2)	(3)	(4)	
Reform	0.248^{***}	0.263***	0.218***	0.229***	
	(0.001)	(0.001)	(0.005)	(0.005)	
Time dummy	0.236***	0.179^{***}	0.220***	0.190***	
-	(0.001)	(0.001)	(0.006)	(0.007)	
DiD estimator	-0.252^{***}	-0.258^{***}	-0.276^{***}	-0.275^{***}	
	(0.001)	(0.001)	(0.008)	(0.008)	
Yrs of particip.		0.017^{***}		0.015^{***}	
		(0.0005)		(0.003)	
Mean v. c. US		-0.390^{***}		-0.398^{***}	
		(0.005)		(0.025)	
Mean v. c. China		-0.413^{***}		-0.517^{***}	
		(0.007)		(0.037)	
UNSC membership		-0.036^{***}		-0.086^{***}	
		(0.002)		(0.012)	
BRI part.		0.089***		0.028^{***}	
		(0.001)		(0.006)	
Constant	10.777^{***}	11.132***	7.363^{***}	7.816***	
	(0.001)	(0.007)	(0.003)	(0.038)	
Observations	150	150	150	150	
Akaike Inf. Crit.	$2,\!111,\!371.000$	2,086,239.000	$73,\!165.120$	72,715.950	
Note:			*p<0.1; **p<0	0.05; ***p<0.01	

Table A.17: Results on DiD, word and sentence counts

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