

# Unrealized fertility and Financial Resources in contemporary China

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## Background

China, which has long been known for its massive population, has developed into one of the low fertility societies. This transition began in the 1970s and was completed relatively quickly. According to the seventh census, China's overall fertility rate has already fallen to 1.3 in 2020, well below the replacement level. Additionally, the ideal number of children, at an average of 1.8, is also below the replacement level (The National Bureau of Statistics of China 2021). The under-replacement of both actual and intended fertility in China has sparked a flurry of debate about policy options to raise fertility. This in turn has prompted demographers to seek a better understanding of childbearing actions and intentions.

Fertility intentions are a strong predictor of fertility at the aggregate level in low fertility settings (Morgan and Rackin 2010; Quesnel-Vallee and Morgan 2003; Liefbroer et al. 2015). However, at the individual level, intentions do not always correspond to actual outcomes (Harknett and Hartnett 2014). According to fertility theory, actual fertility is determined by two factors: (1) fertility intentions, i.e., fertility is intentional behavior, and (2) success in achieving fertility intentions (e.g., Ajzen and Klobas 2013). When it comes to the latter, imperfect success will manifest itself in two ways: unintended fertility and unrealized fertility. In contemporary China, unintended births are exceedingly rare (eg. Zong et al. 2021). In part because of easy and common recourse to induced abortion after unintended pregnancy. However, unrealized fertility is a different story – it is now the leading source of intention-behavior mismatch. Scholars find that in lowest-low fertility societies, desired fertility is substantially above actual fertility. What is more, there is a consensus that the high proportion of fertility never realized is one reason for the lowest-low fertility (e.g., Morgan and Taylor 2006, Harknett and Hartnett 2014). However, China's situation is a bit different because the ideal number of children is below-replacement level, indicating that even if unrealized fertility were eliminated, fertility would still fall below

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replacement (although to a lesser extent). But achieving fertility intentions may be considered as a desirable outcome for individual well-being, all other factors being equal, and increasing actual fertility to the ideal level of 1.8 rather than remaining at 1.3 would be a significant demographic development in and of itself. Yet little research has been conducted on the potential for this occur, in particular rigorous investigation of the factors driving unrealized fertility in China.

## **Literature review**

### ***Fertility in China***

The Chinese government launched its "Wan, Xi, Shao (later, longer, fewer)" strategy in the 1970s at the time of global debate over rapid population growth. As a result, fertility (period TFR) decreased from 5.9 in 1970 to 2.9 in 1979. Due to China's highly regional discrepancies in economic development and implementation of policies, the fertility rate differs significantly by province. The TFR in metropolises (i.e., Beijing and Shanghai) and coastal provinces was the first to fall below the replacement level in 1975 and 1980, respectively (Chen et al. 2009). Between 1979 and 1980, the Chinese government implemented the controversial one-child policy to meet the country's aggressive economic development goals (e.g., quadrupling GDP per capita in 20 years). The one-child policy was strictly enforced in urban areas but was more permissive in rural areas. The rural area had a "1.5 child policy" to accommodate strong son preference, which means that if the first child is a daughter, the family is allowed to have a second child (Zeng & Hesketh 2016). Ethnic minorities, which make up 9% of the population, were permitted to have more than two children. By the late 1990s, the period TFR had decreased to 1.5–1.7, and by 2020, it had decreased to 1.3 (The National Bureau of Statistics of China 2021).

The one-child policy has sparked considerable debate about its effect. The one-child policy was implemented concurrently with economic reforms beginning in the 1970s, which encouraged rapid economic growth, urbanization, educational development, and (to a minor degree) rural-to-urban migration (Feng et al., 2016). Thus, although the TFR decreased dramatically following the policy's implementation, numerous demographers demonstrated that the decline in fertility is more a result of economic development and

urbanization than of policy restriction, as the majority of the decline occurred before the one-child policy, during "wan xi shao" (Chen et al. 2009, Cai 2010, Feng et al., 2016). On the other hand, other demographers and government officials contended that the one-child policy alone had the effect of averting hundreds of millions, if not billions, of births (e.g., Xinhua 2006, Goodkind 2008). Not only is its impact on fertility being debated, but also its effect on social equity and population structure. According to some scholars, the one-child policy enhanced gender equity by 1) relieving women of reproductive burden and raising women's chances of finding well-paid work and career advancement due to low fertility; and 2) elevating children's value regardless of their gender (Zeng & Hesketh 2016). Others contended that the one-child policy did not resolve the core issue but rather exacerbated it. For example, although maternal mortality rates decreased due to low pregnancy, women's reproductive choices about family size and contraception were severely restricted (via forced abortion or insertion of intrauterine devices without consent). Furthermore, the one-child policy resulted in highly skewed sex distributions (Basten and Jiang 2014, 2015, Zeng & Hesketh 2016).

By and large, the consensus is that socioeconomic growth and family planning policies are both primary drivers of China's fertility decline. Socioeconomic variables have been recognized as significant determinants of fertility decline in China since the 1990s (Basten and Jiang 2014). Indicators of development such as employment, GDP per capita, schooling, and women's labor force participation have all been identified as significant determinants (Chen et al., 2009). As a result, in light of the many drawbacks of the one-child policy, a partial two-child policy was adopted in November 2013, enabling couples to have two children if one parent is the sole child. However, couples' reaction to the policy's relaxation has been ambivalent; by the end of August 2015, only 15.4 percent of eligible couples had applied for a second child (Zeng & Hesketh 2016). To encourage births, the government relaxed its fertility policies further in 2016, enabling all couples to have two children without government permission. To this point, however, there is no sign of fertility rebounding in response to the relaxation of the one-child policy. As a result, On May 31<sup>st</sup>, 2021, the government launched the three-child policy. This policy shift indicates that more people can decide how many children they have and face fewer institutional

obstacles to achieve their fertility goal. It is too soon to know whether this further effort to raise fertility will be successful.

### ***Fertility intentions in China***

The ideal family size in China is, on average, very low compared to other countries. More specifically, Xie and colleagues (working paper) show that in 2018 Chinese women aged 15-49 have the lowest ideal number of children among other low fertility societies in East Asia and Europe, such as Japan, Korea, Sweden, Germany. Chinese women's ideal is, on average, 1.86 children, whereas in all other countries in this study the average ideal number is more than two children. Similarly, Morgan et al. (2009) show that the ideal fertility in China 2001 is 1.7, well below replacement level. What is more, the fertility ideals of urban women are even lower, only 1.1 children on average (Xinhua 2003). However, such a low fertility ideal is not uniform across birth cohorts. The ideal family size decreases by birth cohort: women born before the 1950s have the highest ideal family of an average of 3, women born in the 1960s have an average ideal family size of 2, and women born in the 1990s have an average ideal family size of around 1.7 (Xie et al. 2018). Similarly, fertility intentions in the cross-section are also decreasing over time. From 1980 to 2020, the ideal number of children for women in China declined from 2.2 to around 1.8 (Xie et al. 2018, The National Bureau of Statistics of China 2021).

Though Chinese women already have low fertility intentions, their actual fertility remains lower. According to the most recent census, the ideal number of children for women of childbearing age in 2020 is 1.8, while the TFR is just 1.3. Between 1980 and 2020, the fertility realizability (i.e. the multiplicative effects on fertility of factors such as economic development level, marriage rate, urbanization rate, etc.; Fertility realizability =  $TFR/\text{desired family size}$ ; Bongaarts 2001) in China decreased from about 1.3 to less than 0.8, suggesting a discrepancy between fertility intentions and behaviors (Xie et al. working paper). Due to the near universality of having one child among married couples, the mismatch more often can be attributed to the failure to progress to a second child. Of course, as the proportion of unmarried people has increased in the past decades, non-marriage may also contribute. This dissertation is focused on fertility, so I won't analyze

the contribution of marriage. The limited existing research on the determinants of having a second child identifies effects of social, cultural, economic, and policy considerations, with the direct and indirect costs of children serving as a significant impediment to fulfilling one's wish for a second child in contemporary China (Zheng et al. 2018). There is still much to understand about the large gap between fertility desires and outcomes. The goal of this dissertation is to fill some of this gap in the research literature.

### ***Unrealized fertility***

It has long been recognized that many countries experience a difference between actual and intended fertility: intended fertility exceeds actual fertility in post-transitional societies, with the reversal of the relative levels of intended and actual fertility occurring in countries at an earlier stage of fertility transition (Bongaarts 2001). Bongaarts (2001) elaborated that this difference is due to the net effect of fertility-enhancing factors (e.g., unwanted fertility, replacement of deceased children, and sex preference) and fertility-depressing factors (e.g., increasing age at childbearing, involuntary infertility, and competing preferences).

On the micro-level, Miller (2011) is among the first scholars to examine both desired and intended fertility instead of concentrating only on one element. Miller (2011) examined the mismatch between desired and actual fertility by highlighting the intention-behavior gap. The gap reflects the degree to which people have followed through on their childbearing intentions, and unrealized fertility occurs as a result of the impediments that exist between the desire to have children and their realization (e.g., Bachrach and Morgan 2013). Eliminating obstacles to the realization of fertility intentions would increase fertility rates. Therefore, many scholars have argued that the fertility intention-behavior gap should be a priority for policy intervention (as against attempting to change intentions) (Aizen and Klobas 2013; Morgan and Taylor 2006; Philipov 2009). Until now, a few studies in the Asian context have examined fertility desire and intention concurrently (Hagewen and Morgan 2005; Miller 2011); however, to my knowledge, no study has been conducted on the micro-level intention-behavior mismatch in China. As previously mentioned, the TFR in China has fallen to a lowest low level (i.e., a TFR of 1.3 or less); it is unclear if

loosening fertility policy will alleviate the situation. Morgan et al. (2009) speculated that if China were to change to a two-child policy or remove all constraints, there would be a short-term baby boom, but competitions from other aspects in life would increase the proportion of women not realizing their fertility intentions due to circumstances later in the lifecycle. Thus, it is critical to investigate the nature of these various competitions, with the aim of attaining a more precise understanding unrealized fertility in contemporary China. This in turn can assist in assessing the strength of "latent" demand for policies that would assist individuals and couples in obtaining the desired number of children (e.g., Philipov 2009).

According to the studies in Western settings, the primary determinants of unrealized fertility include household factors, health factors, and contextual factors. Household factors consist of various kinds of financial constraints (e.g., Matysiak and Vignoli 2008), childcare availability (e.g., Rindfuss et al. 2010, Fukai 2017), domestic gender division of labor, couple's or parents' fertility attitudes (e.g., Kim 2017), women's level of education (e.g., Morgan and Rackin 2010), size of the family of origin (e.g., Balbo and Mills 2011). Health or biological factor is mostly aging, i.e. the inevitable infertility as women reach the end of their reproductive years (e.g., Bongaarts 2001). Furthermore, contextual variables include fertility cultures (eg. Kane and Li 2021), norms about parenting investment and fertility policies (e.g., Beaujouan and Berghammer 2019).

The primary focus of this dissertation is on "financial resources" (hereafter referred to simply as "resources"). I define "resources" as a person's full range of different resources resources, which may include income, property ownership, investments, and family financial support. Numerous studies have confirmed the normative expectation that a minimum amount of financial resources is a prerequisite for parenthood in low-fertility societies. In some instances, failure to follow these requirements results in revising fertility plans (Andersson 2000; Matysiak and Vignoli 2008). To date, research has predominantly examined only one, or just a few, types of financial resource, such as earnings (e.g., Begall 2013, Dey & Wasoff 2010, Hart 2015), housing (e.g., Vidal et al. 2017, Kucheva 2018), and employment (e.g., Jalovaara & Miettinen 2013, Hanappi et al. 2017). However, there is no consensus regarding the impact of one's full array of financial resources. While each type of financial resources has a different meaning at different periods of life and is associated

with different fertility intentions and realizations, in theory all contribute to the formulation of fertility desires and to fertility decision-making processes. Individuals do not achieve financial stability solely through wage or employment; they also invest money and receive assistance from family members. Each type of resources can offset or enhance the influence of other types of wealth on fertility decisions. Thus, by adopting a relatively inclusive definition of financial resources, we can obtain a more comprehensive understanding of how one's financial situation affects fertility intentions and decisions.

### ***Financial Resources***

Financial resources include income, employment, assets, family resources, etc. As mentioned above, although there is consensus that more economic resources are generally associated with desire for more children, there is little research on the actual effect of the full array of financial resources on fertility intentions and behaviors. The majority of research on fertility outcomes use one kind of financial resources as the representation of the household's total financial resource, such as income, home ownership, intergenerational financial support, etc. For example, according to the microeconomic theory of fertility, when it comes to rearing children, income, as a form of financial resources, could not only bring benefits by providing sufficient economic support to raise the children, but also cost by raising the opportunity cost of childbearing (Becker 1960, 1993). Home ownership, which often an indicator of increasing fertility, may be associated with decreased fertility when the expense of owning property competes with the cost of childbearing and childrearing (eg. Vignoli, Rinesi, & Mussino 2013). Similarly, studies consistently show that parental support helps couples achieve their fertility goals, although not all forms of support have the same impact (e.g., Schaffnit 2015). Indeed, it is well established that the relationship between various types of economic resources and fertility is complex (e.g., Weeden et al. 2006, Schaffnit 2015, Stulp & Barrett 2016): it varies according to social contexts, individual demographics, and types of resources. There is value in ascertaining how each specific type of resources affects fertility, but one type of resources does not represent the full financial situation of a household. It is also essential to assess the effects on fertility of all the types collectively, because it seems unlikely that

when making fertility decisions people view each type of financial resource in isolation from the other types.

Additionally, the influence of financial resources might vary by social context, both because the meaning of possession of a particular financial resource differs by social setting and because fertility demands differ. This is possible because of the rural-urban dual system (*chengxiang eryuanzhi*), in which rural and urban residents are treated differently legally, economically, and socially, resulting in a massive development disparity (e.g., Chan & Wei 2019). That is, rural residents are primarily involved in agriculture and hence place a higher premium on resources that aid in farming, whereas urban residents place a higher premium on resources that assist them become more competent in a city context. Second, as a result of the household registration system, urban areas in China have more resources for child development and career development than rural locations. Rural citizens have been deprived of numerous rights due to the Hukou's functioning, including the entitlement to a state pension and various welfare provisions enjoyed by urban residents (Liu 2016). As a result, migrant workers in metropolitan areas who wish to begin having children may prioritize resources that offer them hukou status or provide them with better childrearing resources. Finally, there is an urban-rural divide in reproduction desire and intention, owing to disparate enforcement of fertility policies and differing child preferences (e.g., Guo et al. 2012). Rural residents may feel greater pressure to fulfill their reproduction objectives despite a lack of certain resources.

## **Research Questions**

This paper investigates unrealized fertility in contemporary China. Due to data restrictions, in this study unrealized fertility is conceptualized as “untranslated fertility desire”. Fertility desire reflects a person's childbearing wishes, according to the traits-desires-intentions-behavior framework (Miller 2011). In contrast to fertility desire, fertility intention, translated from desires, emphasizes actionability, determination, and preparation and reflects facilitators and constraints presented by various factors, including socioeconomic situation (Miller 2011). The standard definition of unrealized fertility refers to the failure of translating fertility desire/intention into behavior, while the current dependent variable is unrealized fertility as the failure to translate fertility desires into



fertility intentions. Both definitions reflect causal paths in Miller's framework and "untranslated fertility desire" reflects an earlier stage of failure of realization than "unrealized fertility", implying the consequent failure of translating into actual birth. Therefore, examining "untranslated fertility desire" is as important as "unrealized fertility". In sum, I define "untranslated desire" as the difference between the number of children desired (fertility desire) and the number of children planned (fertility intention).

I will explore the relationship between different forms of financial resources and unrealized fertility in China. The primary limitation of the studies described above is that they focus exclusively on one type of financial resources rather than considering financial resources simultaneously. This paper will examine the untranslated fertility desire in China, focusing on the role of resources. I approach resources holistically, including different types of financial resources, in my evaluations. The study contributes to the existing body of knowledge by elucidating 1) how different financial resources influence the translation of fertility desires into intentions; and 2) how the effects of different types of resources vary across social contexts in China.

## **Data and Methods**

### **Data**

I draw on the 2016 Survey of Chinese Families' Fertility Decision-Making Processes (referred to hereafter as SFDP). The SFDP was conducted by the Center for Population and Development Studies at Renmin University to better understand the effect of China's newly adopted universal two-child policy on fertility (Jin et al., 2016). Twelve cities in six provinces—Zhejiang, Sichuan, Shandong, Guangdong, Liaoning, and Hubei—were chosen by the SFDP. A multistage probability sampling design was used to select 500 households in each city. Since China's universal two-child policy disproportionately affects urban populations, the SFDP oversampled urban households. The primary interview was conducted with women aged 20-49 who were currently married and had lived in their current location for at least six months. The restriction to currently married women could be problematic because non-marriage and delayed marriage is a major barrier to achieve fertility goals. However, for this dissertation, I only investigate those who are married women (the role of nuptiality in generating unrealized fertility is deserving of separate

investigation.) What is more, due to the rigorous birth control policy, Chinese who had non-marital births were obliged to pay social maintenance fees (Jiang & Liu, 2016), therefore, non-marital fertility is rare, and is often not included in fertility research in China. The SFDP 2016 gathered extensive data on female respondents' fertility attitudes, behaviors, and histories, as well as the sociodemographic profiles of both partners and their parents and in-laws.

### **Dependent Variable**

As discussed above, the main dependent variable in this study is “untranslated fertility desire”, which is the difference between the number of children desired (fertility desire) and the number of children planned (fertility intention). In the SFDP, the former is measured by asking each respondent about their desired number of children: "How many children do you wish (*xiwang* in Chinese) to have?". The latter – fertility intention (number planned) – is obtained for different subsets of women slightly differently, according to their childbearing career to date. For women who have never been pregnant, the survey inquiries about their total reproductive intentions: "how many children do you intend (*jihua* in Chinese) to have?" For those who have never had a child but are currently pregnant, as well as those who have already given birth, the survey asks about their upcoming fertility plans: "How many *additional* children do you intend (*jihua* in Chinese) to have?" Thus, to obtain a total fertility intention variable, I add the current number of children to the planned number of additional children for those who already have children. I add one child to the planned number of children for those who are already pregnant at the time of the survey.

The measurements of "desire" and "intention" here are standard in fertility questionnaires. However, because China had such a highly restrictive fertility policy for many decades, the validity of such measurement is often questioned. It is commonly worried that the answer to the fertility desire questions may be potentially affected by the constraint imposed by the one-child policy. To address this issue, I looked into the survey data on factors that respondents give as influencing their fertility desires and intentions. Tabulating these, policy is only the sixth most influential factor (after economic factors, childcare, current child's companion, partner's opinion, and health condition) on fertility

desires. And for fertility intention, only 0.5 percent of respondents are not planning to have another child due to policy restrictions (detailed distributions are in Appendix 1). These results resonate with a previously mentioned point of economic factors overpowering policy influences on people's fertility preferences and plans. Therefore, although it is undeniable that people are under certain degrees of policy/political exposure which might affect their answers or preferences, the current survey questions are deemed as valid for the purposes of this study.

On top of the validity of measurement, there is also the question of its adequacy because it does not capture the unstable nature of fertility motivations and preferences. For example, studies have shown that women may be unsure about their fertility desires, and the answers to such survey items vary according to the type of questions and how they are conveyed (e.g., Ní Bhrolcháin and Beaujouan 2011). Furthermore, fertility intention is fluid over the life course (e.g., Hayford 2009) and could be ambivalent or weakly held (e.g., Agadjanian 2005). This is problematic due to the time unit's inconsistency. In other words, if fertility intention varies with time and environment, and we only have data on fertility intention at a single point in time, this works against its validity as a predictor of completed fertility. But the literature shows that - short-term fertility intentions are powerful predictors of near-term reproductive behavior (e.g., Ní Bhrolcháin and Beaujouan 2019).

I utilize a total fertility intention and desire measure rather than a short-term fertility intention or desire measure, primarily since the latter was not included in the SFDP. However, I believe that the measures used are sufficient for the research since 1) The primary issue in this scenario is whether to have a second child following the birth of the first. And this is nearly always a short-term decision – in China couples rarely wait ten years to have a second child. Surely the majority of responses understand that this is a decision that will affect them over the next few years. Thus, from a practical sense, my measures are short-term in nature, even if they are not explicitly stated as such.; and 2) they are consistent in the unit, i.e., they both evaluate individuals' projected fertility motivations or preferences from the time of the survey through the end of their reproductive careers. Hence these measures meet the needs of this research. One could argue that if according to responses early in her reproductive career a woman does not

intend to fulfill her fertility desires, this provides meaningful insight about the obstacles and concerns she faces.

The dependent variable is the difference between fertility desires and fertility plans, constructed as a three-category variable: excess, match, untranslating. Respondents whose desires exceed their plans fall in the status 'untranslating fertility' (i.e., they will fall short if their eventual experience conforms with their plans). Those whose childbearing according to their plans exceeds their desires fall in the status of "excess fertility". And those whose plans match their desires fall into neither untranslating nor excess fertility, i.e., match (of desires and plans). Some women responded that they were unsure of their fertility desire or their intention. Considering each situation in turn: (i) If respondents are unsure of their fertility desires, I assume they cannot fall short or surpass them, i.e., neither excess nor untranslating fertility. (ii) If respondents are uncertain about their fertility plans, other variables are examined to make the measure as inclusive as possible:

1. If the woman's current number of children exceeds her desired number of children, she has exceeded her fertility desires (i.e., intentions for future fertility are not relevant). 0.1 percent of the sample is classified based on this criterion.
2. If the woman's current number of children matches her desired number of children, she cannot fall short of her desire (i.e., definitely not status of untranslating fertility). This situation applies to 1.16 percent of the sample.
3. If the respondent's stated reason for not having additional children is "health issues," I assume she is unable to have additional children and is therefore classified as intending to have no additional children. According to this criterion, 0.23 percent of the sample is categorized.
4. If the respondent agrees or strongly agrees with the statement "I would have more children if the fertility policy is relaxed," I consider them to be trying to have another child now that the policy has been lifted. 6.41 percent of the sample falls into this situation.

Due to the study's primary focus on untranslating fertility, I exclude missing and unknown cases (which account for 2.94 percent of the total sample), leaving a final sample of 5,796 women.

**Table 1. Distribution of exceeding, no mismatch and untranslated fertility by parity**

Parity	0	1	2	3	Total	%
Exceeding	70	378	163	48	659	0.11
No mismatch	732	2321	743	33	3829	0.66
Untranslated	166	1124	17	1	1308	0.23
Total	968	3823	923	82	5796	1.00

For the purpose of analysis (will be discussed in detail below), I generated two mutually exclusive dichotomous dependent variables – “exceeding fertility” and “untranslated fertility” – from the three-category variable “untranslated fertility desire”. “Exceeding fertility” excludes observations with untranslated fertility desires, and “untranslated fertility” excludes observations with exceeding fertility desires.

### **Main Predictors**

In this paper, “resources” is the independent variable. I look at both the resources that the couple own themselves, and the resources the couple receive from others. The former includes the household annual earnings and the possession of savings, cars, real estate, or financial investments (e.g., stocks and mutual funds). I define the household as taking possession of the holdings whether one or both spouses own the asset. Total household annual income is a crucial factor while analyzing resources because it reflects the couple’s financial ability to raise children, which is positively associated with women’s intention to have a second child (e.g., Jin et al. 2016). The latter includes financial support from parents, which is also a measure of one’s access to resources. Financial support from parents could be vital because it is a common funding source for Chinese young adults, especially for those born as the only child of the family (e.g., Fastoso et al. 2018).

Table 2 presents descriptive analysis of different types of resources by urbanity. On average, the total annual income of urban households is 30% higher than that of rural households, reflecting the dual economic system. The vast majority (89%) of households have savings, a similar figure for rural and urban areas. A larger proportion of rural households have automobiles, although over half of household owns automobiles for both rural and urban areas. Urban families are twice as likely to have financial investments as

rural families; however, the share is low in both regions. For both rural and urban households, approximately 60% of families are financially supported by their parents.

Table 2. Descriptive of types of resources

	Urban	Rural	Total
<b>Couple's resources</b>			
Total Annual Income	¥102,592.50	¥79,167.27	¥99,257.02
% Have Savings	0.90	0.84	0.89
% Have Automobiles	0.59	0.69	0.60
% Financial Investment	0.20	0.10	0.18
<b>Received resources</b>			
% Financial support	0.63	0.60	0.62

### Statistical Approach

A sequence of linear regressions is used to do the analysis<sup>2</sup>. Normally, when the outcome variable is categorical, one would use a logit or probit model; however, there is an increasing case for employing a linear model instead. Similarly, Breen et al. (2018) note that while the difference in outcomes between linear and logit models is minor, the results from linear models are significantly more interpretable than those from logit models. As a result, the trade-off is not worthwhile. Additionally, because provinces can vary significantly in terms of development, gender norms, and fertility culture. For both untranslating and surpassing fertility, I conduct the study using linear regressions with a geographical (province) random effect. To investigate the contextual effect of financial resources, I run separate analyses for urban and rural regions and compare the two social environments. Additionally, because the dependent variables are designed as the difference between two variables, namely fertility desire and intention, I evaluate whether the effect of financial resources on "untranslated/exceeding fertility" is actually on fertility desire or intention, or on both.

For all the analyses above, I use the following controls: As stated earlier, other important determinants of unrealized fertility include household, health, and contextual

<sup>2</sup> Multilevel logistic regression produces roughly identical findings and is available upon request.

factors. Since women in the sample ranges 17 to 53 years old, and the average age is 33, health factors do not impact the majority of them, I only control for household and contextual factors. As a result, for both chapter 1 and 2, I control for the following:

1. For household factors, I control whether the couple would get childcare assistant from their parents, whether the couple themselves are the only child, and women’s education. Individuals' sibship size may affect the amount of resources they can obtain from their parents and their desired family size (Ji et al. 2015). And due to the lack of formal public childcare services, the availability of informal childcare assistance from couple’s parents is an important factor that shapes women's fertility intentions in contemporary urban China (Jin et al. 2016). Education is a central factor determining fertility because it can empower women by providing cultural resources, but it can also increase the opportunity costs of childbearing because it affects employment and earning potential, thereby affecting women's fertility (Blood and Wolfe 1960; Martin 1995). Table 3 shows the level of education attainment in the sample: the urban-rural divide is enormous. 31% of rural respondents have primary or less education, compared to only 2% of urban respondents. 30% of urban respondents did more than secondary education, while only 11% of rural respondents did.

Table 3. Women’s education by urbanity

Education	Urban		Rural		Total	
	Freq.	%	Freq.	%	Freq.	%
Primary or less	80	0.02	338	0.31	418	7.24
Junior high	1422	0.30	363	0.34	1785	30.92
Senior high/secondary vocational	1763	0.38	253	0.23	2016	34.92
Associate degree	1000	0.21	102	0.09	1102	19.09
Bachelor's and above	429	0.09	23	0.02	452	7.83

2. For contextual factors, I control for hukou status, urban/rural, and employment status. As mentioned above, during the one-child policy, enforcement of the fertility policy for married couples differed depending on their hukou status (Zheng et al., 2009). I control for women's current hukou types to address such differential

treatments. Hukou status includes agricultural, non-agricultural, and residence (jumin) hukou, a new universal hukou type employed in several cities to eliminate the distinction between agricultural and non-agricultural hukou. Fertility and female employment are negatively linked in most context (Bernhardt 1993). As a result, I control for the employment status of women at the time of the survey.

The descriptive statistics for the control variables (except education) are shown in Table 4. On average, approximately 70% of a couple's parents desire additional grandchildren. Within a family, around 35% of the time, either the husband or wife is the only kid, and 26% of the time, both the husband and wife are the only children. Around half of families receive some form of childcare assistance from their parents. Women in the sample, on average, are 33 years old. Approximately half of women had agricultural hukou, indicating that the universal two-child policy less impacted them. The sample is evenly distributed among the six provinces, with a large concentration (86 percent) of urban residents. Nearly 90% of the women in the sample are employed.

Table 4. Descriptive of control variables

Variable	%	Variable	%
<b>Household Factors</b>		<b>Contextual Factors</b>	
Couples are the only child		Hukou status	
Yes, wife	33.9	Agricultural	47
Yes, husband	36.7	Non-agricultural	24.2
Yes, both	25.5	Residence	28.8
Childcare support from parents		Province	
Yes	53	Zhejiang	15.1
<b>Health Factors</b>		Sichuan	19.2
Woman's age (average)	33	Shandong	15.5
		Guangdong	16.3
		Liaoning	16.9
		Hubei	17
		Urban	85.8
		Employment	
		Employed	88.5
		Unemployed	11.5



## Results

Table 5. Bivariate Correlations for all the variables.

	untranslated	total income	saving	house	auto	finance	parents financial support	wife's education
untranslated	1.00							
total income	-0.06	1.00						
saving	-0.08	0.17	1.00					
house	0.03	0.12	0.08	1.00				
auto	-0.06	0.24	0.16	0.08	1.00			
financial products	-0.05	0.35	0.14	0.15	0.22	1.00		
parents financial support	-0.08	0.10	0.08	-0.08	0.03	0.07	1.00	
wife's education	-0.05	0.29	0.10	0.06	0.11	0.18	0.14	1.00

The bivariate correlations for all variables described before are shown in Table 5. Correlation results indicate that different types of financial resources have a distinct correlation with untranslated fertility, which confirms my earlier claim. An additional VIF collinearity test was conducted, and only the wife's education was shown to be highly correlated (VIF 11,36,32, respectively), and thus excluded from the analysis. Apart from that, the maximum VIF for a single predictor, wife's employment, is 5.64, significantly below the limit of 10, showing that multicollinearity is not an issue.

The regression results in Table 6 are for two models: the first is a linear regression model on exceeding fertility desire with a provincial fixed effect; the second is a similar model but for untranslated fertility desire. The regressions indicate that, after adjusting for other covariates, the household's total income ( $p < .001$ ) and the couple's savings ( $p < .05$ ) are significantly associated with exceeding fertility desires, whereas owning a home ( $p < .01$ ), having savings ( $p < .05$ ), and receiving financial support from parents ( $p < .05$ ) are all significantly associated with untranslated fertility desires. Additionally, these factors affect untranslated fertility in different directions. Home ownership contributes to untranslated fertility desires, but saving and parental financial support mitigate untranslated fertility.

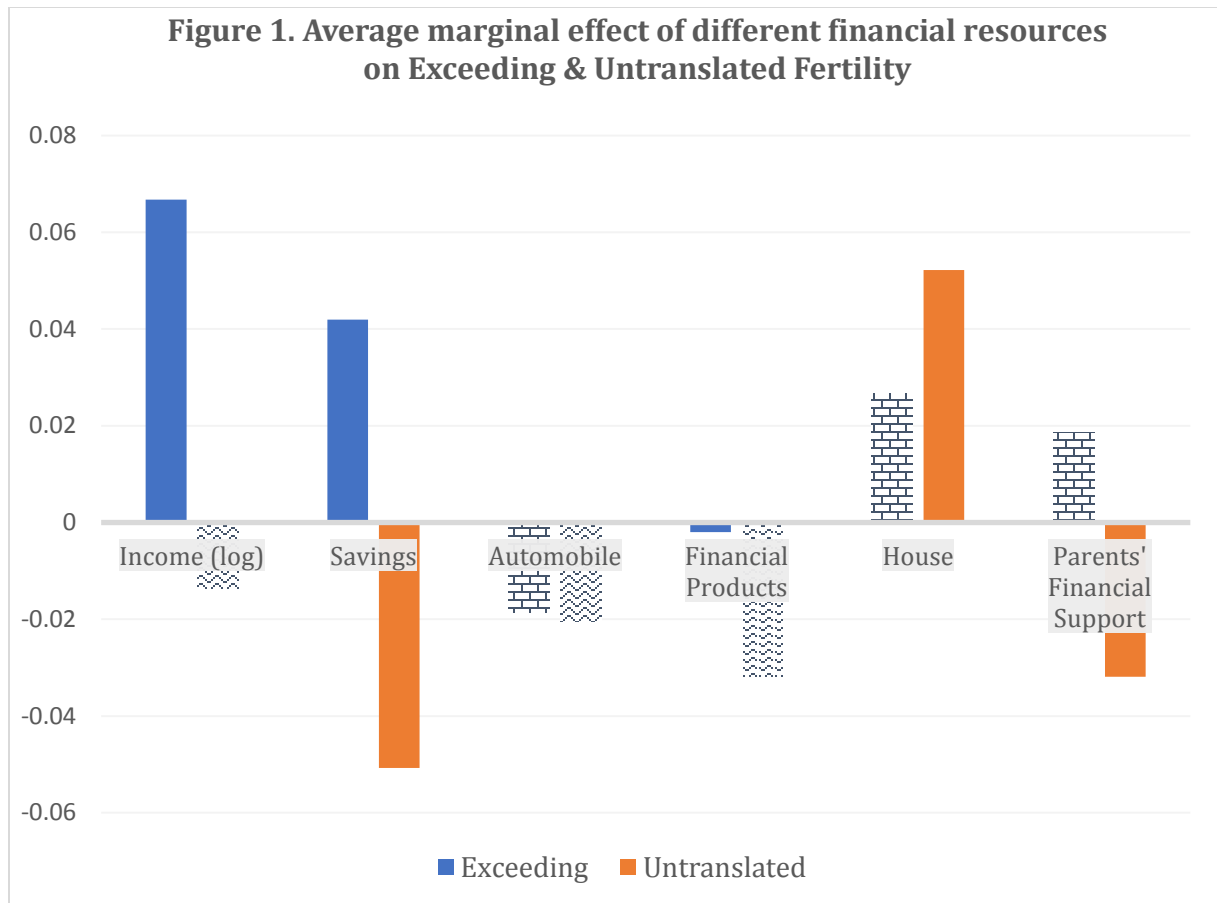
Table 6. Regression result of full models (controls result omitted)

	<b>Exceeding</b>	<b>Untranslated</b>
<b>Total income (log)</b>	0.07 (-0.012)***	-0.01 (-0.015)
<b>Auto</b>	-0.02 (-0.012)	-0.02 (-0.014)
<b>Financial product</b>	-0.00 (-0.016)	-0.03 (-0.019)
<b>House</b>	0.03 (-0.015)	0.05 (-0.018)**
<b>Saving</b>	0.04 (-0.019)*	-0.05 (-0.021)*
<b>Parents' financial support</b>	0.02 (-0.013)	-0.03 (-0.015)*
<b>Constant</b>	0.07 (-0.099)	0.02 (-0.12)
<b>Observations</b>	3935	4502

Standard errors in parentheses

\*p<.05 \*\*p<.01 \*\*\*p<.001

The average marginal effects of various financial resources on exceeding and untranslated fertility are demonstrated in Figure 1. It more vividly depicts the heterogeneity in the effect of various financial resources on the mismatch between fertility desire and intention. The solid colors denote significant effects. Increasing log income by one unit raises the probability of exceeding fertility by an average of 6.7 percent. Similarly, when a household possesses savings, the likelihood of exceeding fertility increases by around 4.2 percent. Income, however, is not a strong predictor of untranslated fertility; rather, savings, homeownership, and financial support from parents are. The resources considered in the analysis have effects of different directions on untranslated fertility. On the one hand, when a household has savings, the probability of having untranslated fertility drops by an average of 5.1 percent, and when financial support from parents is obtained, the probability decreases by an average of 3.2 percent. On the other hand, homeownership raises the probability of having untranslated fertility by around 5.2 percent.



Analyses of exceeding or untranslated fertility in different social contexts are also conducted. Table 7 and Figure 2 is the regression results and average marginal effects by urban and rural. The regressions indicate a significant contextual effect, i.e. financial resources have different effects on untranslated/exceeding fertility in different social contexts. More specifically, for untranslated fertility, controlling for other covariates, in rural area, owning automobile is negatively associated with untranslated fertility ( $p < .05$ ); in urban area, owning a house increases untranslated fertility ( $p < .05$ ), while receiving parents' financial support reduces it ( $p < .05$ ). For exceeding fertility, controlling for other covariates, in both rural and urban area, income is positively associated with exceeding fertility but of different level of significance (urban  $p < .0001$ , rural  $p < .05$ ); moreover, having savings in urban area increases exceeding fertility ( $p < .05$ ).

Figure 2 illustrates the contextual effect of financial resources on untranslated and exceeding fertility. The solid colors denote significant effects. We see that 1) in different social contexts (i.e. urban vs rural), same resources have different effect on untranslated

and exceeding fertility: for exceeding fertility, a unit increase in income in urban areas increases the probability of having exceeding fertility by 5.8%, but the increase become 7.5% in rural areas (although of lower level of significance); having savings in urban area increases the probability of exceeding fertility by 5% but is not significant in rural areas. For untranslated fertility, home ownership (4.8%) and parents financial support (-3.8%) are significant in urban area, but only automobile (-7.3%) is significant in rural area. 2) in the same social context, different resources have different effect on untranslated and exceeding fertility: in urban area, income and savings are significant for exceeding, while house and parents' financial supports are significant for unrealized fertility. In rural areas, income is significant for exceeding while automobile is significant for unrealized fertility.

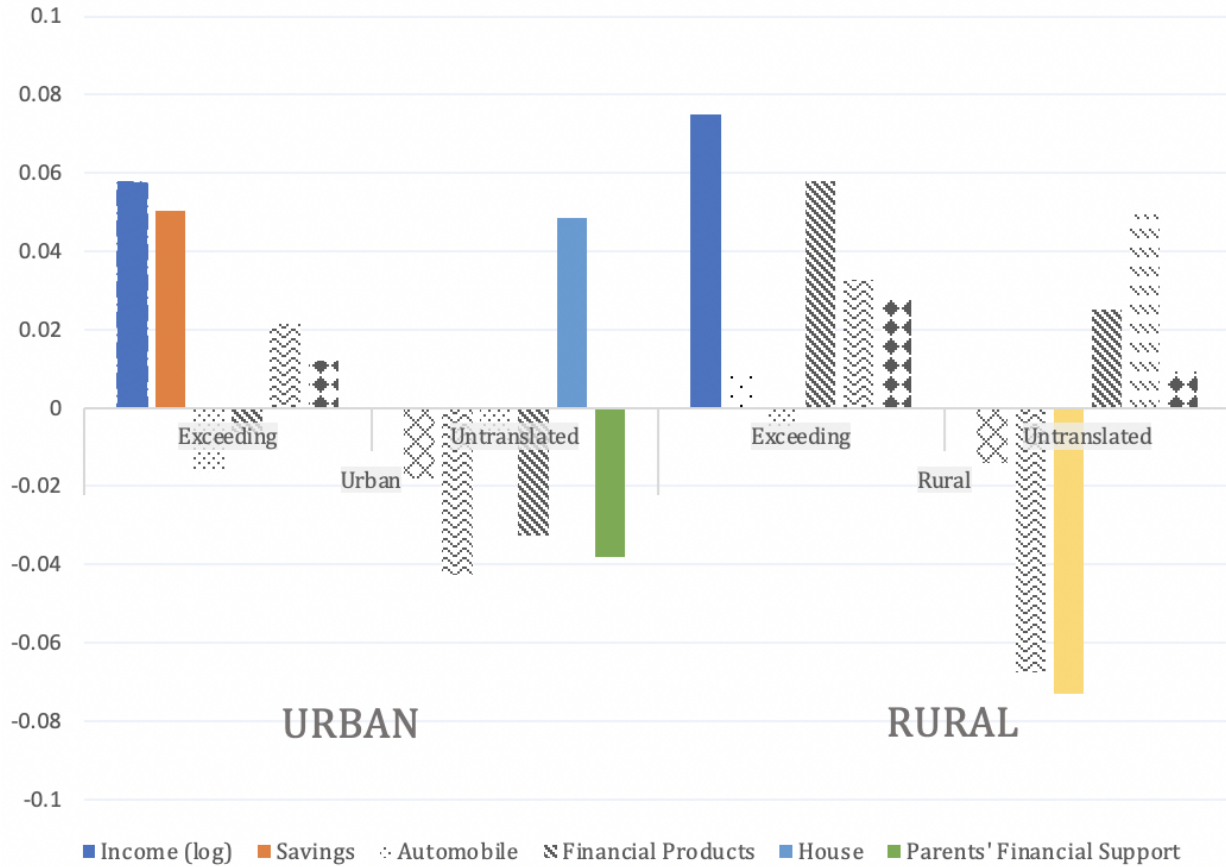
Table 7. Regression result of urban and rural models

	UNTRANSLATED		EXCEEDING	
	Urban	Rural	Urban	Rural
<b>Total income (log)</b>	-0.018 (-0.016)	-0.014 (-0.038)	0.058 (-0.013)***	0.075 (-0.035)*
<b>Auto</b>	-0.009 (-0.015)	-0.073 (-0.036)*	-0.016 (-0.013)	-0.005 (-0.035)
<b>Financial product</b>	-0.033 (-0.020)	0.025 (-0.067)	-0.006 (-0.016)	0.058 (-0.059)
<b>House</b>	0.048 (-0.02)*	0.05 (-0.037)	0.022 (-0.016)	0.033 (-0.036)
<b>Saving</b>	-0.042 (-0.023)	-0.067 (-0.044)	0.050 (-0.021)*	0.009 (-0.044)
<b>Parents' financial support</b>	-0.038 (-0.016)*	0.009 (-0.040)	0.012 (-0.014)	0.028 (-0.038)
<b>Constant</b>	0.053 (-0.120)	0.414 (-0.128)**	0.036 (-0.099)	0.625 (-0.389)
<b>Observations</b>	3909	593	3353	582

Standard errors in parentheses

\* P<0.05 \*\* P<0.01 \*\*\* P<0.001

**Figure 2. Average Marginal Effect of Financial resources on Exceeding & Untranslated Fertility by Urbanity**



Due to the fact that the dependent variables "exceeding" and "untranslated" are constructed as the difference between "intention" and "desire," separate regressions on "desire" and "intention" are conducted to determine whether the effect of financial resources on untranslated fertility is due to an effect on fertility desire, intention, or both. The regression results (available upon request) indicate that none of the financial resources have a significant effect on fertility desires; in fact, the only factors that have an effect on fertility desire are the husband being the only child ( $p < .01$ ) and urban hukou status ( $p = .05$ ). However, both income ( $p < .001$ ) and parental financial support ( $p < .01$ ) are statistically significant for fertility intention. In other words, financial resources have an effect on untranslated fertility by influencing fertility intentions, which makes sense given that intention reflects the real-world conditions necessary to attain the desired outcome.

## Conclusion and Discussion

Four main conclusions are drawn from the empirical results. First, in general, different resources have different effect, in terms of size and direction, on the outcome of the translation of fertility desire into intentions. Table 6 and Figure 1 illustrate this point most directly. Household income, receiving financial support from parents and owning savings facilitate translating desire into intention, while owning residence hinders the process. The finding on financial support is consistent with the previous studies that parental support helps couples achieve their fertility goals (e.g., Schaffnit 2015), and that policies including financial transfers tend to increase completed fertility (eg. Thevenon & Neyer 2014) and fertility intentions (eg. Billingsley & Ferrarini 2014). The negative relationship between untranslated fertility and home ownership is consistent with prior results that home ownership may be associated with decreased fertility when the expense of owning property competes with the cost of childbearing and childrearing (eg. Vignoli, Rinesi, & Mussino 2013). This is quite likely, given China's high property prices. Income is more complicated – it has been historically the more complex factor relating to fertility outcomes; for example, it is shown to have a U-shaped relationship with fertility due to the effect of opportunity cost of childbearing (eg. Liu & Liu 2020). In my results, income is positively correlated with exceeding fertility desire, but not significant for untranslated desires (more discussions below).

This leads to the second finding: the size of the effect of each resource varies by outcome; that is, the same financial resources have different effects on untranslated or exceeding fertility. For example, household income has a significant influence on exceeding fertility but not on untranslated fertility. Only untranslated fertility is influenced by home ownership and parental financial support. The reason for this disparity has yet to be determined. However, Yan (2003)'s "new and traditional fertility culture" framework could shed light on such findings. According to Yan (2003), traditional culture values children more to the extent that they could sacrifice their standard of living. While the new fertility culture emphasizes the quality of living for the parents. According to Kane and Li (2021), people who want a second child tend to fall into the traditional fertility culture, while those who do not want a second child provide reasons compatible with the new culture. Furthermore, it was almost always women who advocated for the new fertility culture.

Taking these factors into account, the income effect disparity makes sense – income is only positively correlated with exceeding fertility desires because people with exceeding fertility desires tend to fall into the traditional culture ideology, which would sacrifice their own career and assets to rear more children, so income is a huge factor. People with untranslated fertility desires, on the other hand, tend to fall under the new cultural umbrella that values individuality and women's career development, so higher income, although would make children more affordable, raises the opportunity cost for them. A similar argument could be made about home ownership: if mortgages are the reason that home ownership impedes the translation of desire to intention, then it has a greater impact on the family that believes in the new fertility ideology.

Third, social context matters. Table 7 and Figure 2 illustrate this point clearly. We see that in different social contexts (i.e. urban vs rural), the same resources have different effect on untranslated and exceeding fertility. More specifically, income and automobile are the two resources that significantly affects the fertility desire-intention mismatch in rural area, and income, house, savings and parents financial support all contribute to such mismatch in urban areas. The findings speak to the discussion in the previous session that resources are viewed differently in different context. For example, in rural area, automobiles are essential for productivities (due to the lack of available transportation for residents and cargos) and thus have more significance in people's decision-making process. What is more, it might be the case that rural residents tend to have traditional fertility culture, their possession of resources is less decisive in fertility decisions – they will choose to have children regardless of their financial standing. In contrast, urban residents consider more aspect of their financial reservoir when it comes to childbearing: they consider income, house, savings and whether or not they will receive additional financial support from parents.

And lastly, the financial resources affect the fertility desire-intention mismatch mainly through affecting fertility intentions instead of fertility desires. In fact, of all the independent variables considered, only “husband being the only child” and owning urban hukou are significantly associated with fertility desires. This is intuitive because fertility desire is by definition less dependent of real-world constraints and usually dependent on

social norms and ideology, while fertility intention takes into account necessary resources needed to attain the desired outcome (eg. Bachrach and Morgan 2013).

### **Contribution and Limitations**

This paper captures the variability that would have been overlooked if only one type of financial resource in one specific social context was examined. It provides a comprehensive look at the impact of financial resources on the fertility desire-intention mismatch. The significant differences in effect size and direction described in this study demonstrate the value of examining the measures concurrently. The study adds to the existing body of knowledge by demonstrating that when researching unrealized fertility, a person's full array of financial resources should be considered. Furthermore, both untranslated fertility and exceeding fertility, which are mismatches between fertility desire and intention, are dependent on different types of financial resources. What's more, the effects of resources on untranslated or excess fertility differ across social contexts.

The study's limitation is a lack of data. To begin with, the dependent variable "untranslated fertility" is not ideal. The questions in the SFDP, as mentioned in the method section, do not capture the volatility of fertility motivations and preferences. Although the data for the study is adequate, it would be interesting to see how people adjust their fertility intentions in response to short-term or unexpected loss (e.g., job loss) or acquisition (e.g., inheritance) of resources. Second, there is a lack of depth in the survey's financial information. It would be more beneficial and illuminating to examine not only the possession of resources, but also the value of resources and the means of possession (eg. loans, parents help). However, given the scarcity of research on this specific topic, this paper is still useful to the field.



## Appendix 1

The validity of fertility intention and desire questions in China has long been questioned given the strictly enforced fertility policy in China in the past few decades. To address this, most fertility surveys try to disentangle the policy effect from asking questions about factors that influence people’s fertility intentions. In fact, SFDP asks about the main factor that affect the desired number of children, and policy is only the 6<sup>th</sup> most influential factor, after economic factors, childcare, current child’s companion, partner’s opinion, and health condition (Table A1).

Table A1. Factors that influence desired number of children

Couple's health condition	464	8.03
Childcare	941	16.28
Partner's opinion	485	8.39
Wife's parents' opinion	128	2.21
Husband's parents' opinion	163	2.82
Relatives and friends' family size	111	1.92
Economic factors	1419	24.55
Housing conditions	83	1.44
Time factors	106	1.83
Career development	131	2.27
Fertility policies	407	7.04
Fondness for children	77	1.33
Future returns	61	1.06
Current child's companion	928	16.05
Current child's gender	67	1.16
Current number of children	122	2.11
Current child's opinion	41	0.71
Others	47	0.81
<b>Total</b>	<b>5781</b>	<b>100</b>

As for intention, although there is not a question asking what affects people’s intended number of children the most, the question asking “why not planning to have more children” to those who already have one child shed some lights: only 0.5 percent of respondents are not planning to have another child due to policy restrictions (Table A2). These results resonate with the economic takeover point of view, i.e. economic factors overpowering policy influences on people’s fertility preferences and plans. Therefore,

although it is undeniable that people are under certain degrees of policy/political exposure which might affect their answers or preferences, the current survey questions are deemed as valid for the purpose of the study.

Table A2. Reasons not to have further birth (for women at parity 1)

Pressure from work	260	6.8
No helping hands	384	10.04
Decrease life quality	295	7.72
Health conditions	407	10.65
Housing conditions	40	1.05
Economic conditions	730	19.09
Career development	41	1.07
Policy restriction	20	0.52
Current children want no more siblings	52	1.36
Others	29	0.76
<b>Total</b>	<b>2258</b>	<b>59.06</b>

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