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What Drives China's Exports: Evidence from a Domestic Consumption Expansion Policy

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Abstract: The relationship between domestic demand and exports has remained the focus of the academic world for a long time. A large body of research has confirmed the promotion effect of international trade on domestic demand. This study uses a difference-in-difference (DID) model to estimate instrumental variables. In addition, we have discussed that China's "Home Appliances to the Countryside" policy as an instrumental variable for domestic demand as it affects exports through the two-stage least squares (2SLS) method. The empirical results show that expanding domestic demand can significantly promote exports. The internal mechanism is that the subsidy policy stimulates domestic demand, which improves total factor productivity (TFP). TFP could enhance the international competitiveness of enterprises effectively. Furthermore, this study negates the channel that prices decline in promoting export. A series of robustness test policies that promote domestic demand can significantly boost exports. This study provides evidence for the solid complementary relationship between domestic demand and exports in the home appliance industry.

Keywords: domestic demand; exports; home appliances to the countryside; DID

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1. Introduction

Domestic demand has drawn attention because of export-led economic weakness. Domestic demand is the foothold of foreign trade development and an essential source of foreign trade advantage [1]. Most exporting firms are the result of the entry of local firms, which initially provided goods or services to domestic consumers, into international markets under open conditions [2]. We can learn that products with high domestic demand can be successfully transformed into competitive exports only if the domestic system is well developed. In contrast, the opposite institutional imperfections will inhibit this transformation process and make exports face tough challenges. However, China's export industry needs to be more connected to domestic demand, as many exporters need sales operations in China [3]. China's position in the global industrial chain is being challenged, which suggests that a trade development model detached from domestic consumption demand may not be the most effective way to participate in the international division of labor.

Another fact is that China's "Home Appliances in the Countryside" policy contributed to China's economic growth during the 2008 global financial crisis. As early as 2007, the subprime mortgage crisis began to emerge, and then international market demand became unpredictable. The Central Working Conference changed the monetary policy from "prudent" to "tight." The investment growth rate declined, and its driving effect on economic growth weakened sharply. Meanwhile, China's rural market occupied a vital position in expanding consumption. The National Bureau of Statistics calculated that every unit rise in the rural population's consumption expenditure would double the increase in consumer demand for the entire national economy. For every percentage point increase in the rural penetration rate of household appliances, 2.38 million more products were in need. At the end of that year, China successively introduced financial subsidy policies

to cope with the sharp decline in external demand for electronic products caused by the global financial crisis. These policies, including "Home Appliances to the Countryside" and "Cars and Motorcycles to the Countryside," also stabilized the domestic economy and stimulated domestic consumption growth.

The "Home Appliances to the Countryside" policy is essential to expand domestic demand for home appliances. It is also an innovative breakthrough in fiscal and trade policies. This policy complies with the new trend of upgrading farmers' consumption. The policy primarily uses finance and trade policies to guide and organize industry and commerce to join hands to develop and produce household appliances suitable for rural consumption, with reliable performance, guaranteed quality, and low prices. Additionally, it provides circulation and after-sales services to meet the needs of rural residents. The government subsidized a specific proportion (13%) of household appliances to boost the purchasing ability of rural residents. This has promoted the coordinated development of the domestic demand for household appliances and exports. The Chinese Ministry of Commerce decided to implement the pilot project of "Home Appliances to the Countryside" in Henan, Shandong, Sichuan, and Qingdao from 1 December 2007. Subsidized home appliances included color televisions, refrigerators (including freezers), and mobile phones. On 1 December 2008, Qinghai, Inner Mongolia, Liaoning, Dalian, Heilongjiang, Anhui, Hubei, Hunan, Guangxi, Chongqing, and Shaanxi began to implement the policy. Washing machines have also been added as subsidized objects. The policy was rolled out nationwide in early 2009, while motorcycles, computers, air conditioners, solar water heaters, and other electrical appliances were added to the existing list of electrical appliances. Each province implemented this policy for four years. Therefore, the policy was implemented in Henan, Shandong, Sichuan, and Qingdao until November 2011. Elsewhere, the policy ended in November 2012. During this period, each area also applied the policy to different products according to their demand. Different products face different price caps; for example, the subsidy limit was CNY 260 for electric bicycles, CNY 445 for televisions, CNY 65 for electric cookers, CNY 338 for smoke exhaust ventilators, CNY 195 for gas stoves, CNY 78 for electric pressure cookers, and CNY 65 for DVD players.

Based on the "Home Appliances to the Countryside," this study delves into the critical underlying question of whether we can separate the growth of China's exports from the domestic consumption expansion and the internal mechanisms of the "double circulation" development pattern. We try to provide empirical evidence while clarifying the relationship between domestic demand and exports. Table 1 shows the link between domestic demand and exports. Traditional economic theories have examined the mechanism of exports promoting domestic demand. The main mechanism is that exports can increase in domestic consumption by increasing domestic income [4–6]. Furthermore, the import and export sectors can influence the domestic market through positive interactions and extensive associations with domestic industries [7], while promoting high-quality development of domestic circulation. However, research on export growth driven by domestic demand still needs to be done. This study focuses on domestic distribution as the major force in developing strategic export transformations and upgrading. China's economy has depended on exports for a long time. This export-oriented economy as the primary economic form could be more conducive to the healthy development of the economy. When faced with external environmental uncertainties, China is more vulnerable to shocks than internally oriented economies. This study attempts to discuss the promotion effect of domestic demand on exports through empirical study to seek a buffer economic strategy for China when facing global shocks. The shift from the foreign market to the domestic market can not only directly fill the reduction of exports caused by external economic uncertainty, but also promote the development of external demand by expanding domestic demand. Further, this way is more stable than an economic model focusing on exports at the expense of domestic demand. The problems discussed in this study provide a realistic basis for China to deal with the uncertainty of the external environment. Therefore, exploring the influence

of the domestic consumption market development and consumption upgrading on export promotion is of great practical significance.

Table 1. The links between domestic demand and exports.

Mutual promotion	Exports promotes domestic demand	Exports can directly lead to an increase in domestic consumption, investment, and government spending. Exports can directly stimulate employment, increase household income, and boost domestic consumption. The spillover effect of increased exports can drive domestic technological progress and industrial upgrading.
	Domestic demand promotes exports	The expansion of the domestic market can enhance industrial competitiveness, improve industrial supporting capacity, and create conditions for further expansion of exports.
Competitive relationship	In the short term, domestic demand and exports are competing with each other. The expansion of domestic demand will restrain the development of external demand. At the same time, the expansion of the scale of external demand will temporarily restrain domestic demand.	

Meanwhile, the rise of international trade protectionism and escalation of trade friction between China and the United States, combined with the catalytic effect of the COVID-19 pandemic, has led China to inevitably develop with domestic demand as the main force of economic growth. Therefore, evaluating the relationship between domestic consumption and exports could provide effective solutions. Consequently, this study analyzes the inner power of China's export transformation and upgrading from the perspective of whether the increase in domestic demand promotes exports. This study uses domestic sales and export data of segmented products in China's home appliance industry from 2003 to 2012 to systematically evaluate the impact of "Home Appliances to the Countryside" on domestic demand for home appliance products and to analyze how domestic demand affects external demand. We explore whether the international market is a natural extension of the domestic market. This study finds that domestic sales of home appliances increase significantly during the policy implementation.

Furthermore, we use the forecasted increase in domestic demand for home appliances, namely, the exports of home appliances due to this policy, to study its impact on exports. We find that an increase in domestic sales of home appliances significantly promotes the exports of home appliances, with an elasticity of 0.26%. According to Kalecki's view towards the capacity effect of investments, demand will directly lead to the increase of enterprise investment, which will inevitably lead to the immediate improvement of TFP [8]. In addition, domestic demand has accelerated the agglomeration of the manufacturing sector, and the optimal allocation of production factors has directly promoted the progress of TFP [9]. Another study found that the increase in demand will bring the improvement of TFP directly [10]. We found that domestic demand can boost exports by increasing TFP and we would provide empirical evidence about these mechanisms. In addition, our baseline results also show strong robustness in a series of robust tests, including changing periods, regions, and provinces, substituting the estimators, and adding additional industry control variables.

"Home Appliances to the Countryside" is a physical policy directly stimulating consumption. The research most closely related to this study is on the impact of fiscal policy on demand. According to previous studies, expansionary fiscal policies, such as fiscal subsidies and tax exemptions, can promote an increase in consumption [11–16]. Moreover, expansionary fiscal policies have an announcement effect. The public responds by increasing consumption from the date of a policy announcement to its implementation [17]. The multiplier effect of fiscal expenditures on different objects is different. Brückner and Tuladhar [18] found that enterprises were more sensitive to fiscal cost than households. Some studies have found that the fiscal subsidy policy of issuing consumption vouchers can merely promote an increase in demand for non-durable goods in the short term [19,20]. This indicates that without targeted fiscal subsidy policies, the consumption of durable goods cannot be significantly stimulated. This study focuses on a targeted subsidy pol-

icy for rural home appliances. Additionally, it focuses on the effect of financial subsidy policies similar to "Home Appliances to the Countryside." Mian and Sufi [21] studied the "2009 Cash for Clunkers Program" impact in the United States on the short- and media-run consumption of durable goods, namely, automobiles. They discovered that the policy increased car consumption in cities across the United States, but the effect was not sustained. Green et al. [22] also discussed this issue and found that the policy mainly eased household financing constraints. When Best and Kleven [16] studied the British housing market, they found that every 1% transaction tax reduction led to a 20% increase in property payments and that the effect of the decline was sustainable. When tax cuts were stopped, the stimulus effect waned relatively little. Therefore, we can expect that "Home Appliances to the Countryside" will increase the domestic market demand for relevant products.

Our study is also closely linked to the literature on the effect of "Home Appliances on the Countryside." Overall, the amount of research on this policy is limited. Zhu [23] evaluated the impact of the policy on social welfare through the spatial general equilibrium theory, focusing on the income gap effect, but they did not use actual data to investigate the result of the policy. Chen et al. [24] considered the impact of "Home Appliances to the Countryside" on labor quality and found that the policy effect on women was more significant than that on men, because the policy significantly increased the labor productivity of rural women. However, this study approached the subject from the production and welfare perspective. We should have discussed the impact on demand. Other Chinese scholars have systematically evaluated the effects of the policy on the total retail sales of consumer goods in China without considering the effect on home appliances specifically. This study attempts to remedy this defect by studying the impact of industry-specific policies on demand for that industry and extending the analysis to the impact of demand expansion on exports. Additionally, the data used in most studies only cover the period of up to one year after implementing "Home Appliances to the Countryside." In this study, the sample period is extended to 2012, which enables the evaluation of the sustained impact of "Home Appliances to the Countryside".

We also build on the important literature on the relationship between domestic demand and exports. Conversely, some scholars believe that the relationship between the two is complementary. As early as 1961, Marshall [25] proposed that a large country with large capacity and diversity in its domestic market, which has rich resources and a broad domestic market, would help expand and optimize the external market. According to the home market effect in international trade, under increasing returns to scale, monopolistic competition, and trade costs, countries are more inclined to export goods with greater domestic demand. Countries with large domestic demand markets are likelier to be net exporters of these in-demand commodities [1,26]. The home market effect is also reflected in large countries, and their surrounding regions usually have higher productivity and exports [27,28]. The main reason for this phenomenon is the productivity increase and export price decrease caused by the scale effect [29]. Previous empirical studies have provided strong evidence of the home market effect [27,30,31]. The domestic market effect also shows heterogeneity owing to industrial and regional differences [32]. Li et al. [33] tested the local market effect by using two-digit coding data of the international standard industry classification of manufacturing in China and the countries of the Organisation for Economic Co-operation and Development and found differences in the home market effect among industries. Zhang and Pan [34] discovered the home market effect of business trip alienation in different regions of China. The main reason for the heterogeneity of these home market effects lies in the differences in productivity between regions and industries [2,35]. Some studies found that the home market effect had nonlinear characteristics [36]. Countries with demand deviations from the mean show more potent home market effects. Moreover, domestic market size determines export behavior and affects the structure of international trade [37]. Berman et al. [4] used data on French enterprises from 1995 to 2001 to study the relationship between domestic and international demands. They found that increasing exports effectively drove domestic demand growth in the short

term. Whether based on the international division of labor and market complementarity or trade theories focusing on differentiated products and heterogeneous enterprises, many scholars believe that international trade development primarily relies on the domestic market, which is the soil in industrial development's blossoms.

However, some scholars believe that domestic demand and exports are substitutes for each other [38,39]. Vannoorenberghe's [40] identification strategy, based on a firm-specific geographical instrument, found that the profit-maximization behavior of enterprises facing constant marginal costs led them to make decisions based on the scale of domestic and foreign markets. This shows the substitution relationship between the number of products sold at home and abroad. Using data on Spanish manufacturing companies from 2002 to 2013, Almunia et al. [41] found that negative domestic demand shocks significantly promoted an increase in export flow, indicating that exports can substitute for internal demand during domestic depressions. The research of Eppinger et al. [42] also concluded that exports could be used as a substitute for domestic demand. Domestic demand shocks do not adversely affect the entry and exit of enterprises in foreign markets, and may even enhance the export intensity of enterprises. Liu et al. [43] found that enterprises turned to exports when domestic selling costs increased to ensure their profits. Exports are an effective substitute when domestic selling costs increase. These studies suggest that the substitution relationship between domestic demand and exports usually manifests when domestic demand is low. Few studies have focused on the causal relationship between rising domestic demand and declining exports. We have complemented research in this area.

This study uses domestic consumption and international export data on home appliances from the China Industrial Business Performance Database. We use econometric quasi-natural experiments and a DID model to evaluate the effects of the "Home Appliances to the Countryside" policy. The remainder of this paper is organized as follows: Section 2 introduces the data and our estimation method. Section 3 presents the analysis of the empirical estimation results. Section 4 provides our robustness tests and Section 5 concludes the paper.

2. Data and Empirical Strategy

2.1. Data

This study focused on domestic demand and exports in the home appliance industry, employment, output, and other relevant data. The research objects were 672 commodities (using the Chinese standard four-digit code) in the China Industrial Business Performance Database observed from 2003 to 2012, which yielded 6720 observed values. The Chinese standard four-digit code was revised in 2003. The industry classification criteria used in this study were based on the 2003 version. The China Industrial Business Performance Database can accurately identify most home appliances but is not accurate for each subproduct. Although the Customs Database is more accurate for all products than the China Industrial Business Performance Database, it does not meet the requirements needed to investigate the relationship between domestic demand and exports, for it only includes trade data on corresponding products and excludes data on domestic demand. The China Industrial Business Performance Database can provide this study with information on employees, provinces, sales, and ownership of enterprises. It has been widely used in research on the Chinese economy [44,45]. This study selected eight home appliances covered by "Home Appliances to the Countryside" as the experimental group: mobile phones, refrigerators (including freezers), color televisions, computers, air conditioners, solar water heaters, washing machines, and motorcycles. It should be noted that Henan, Shandong, Sichuan, and Qingdao launched a pilot project of "Home Appliances to the Countryside" on 1 December 2007. Only refrigerators (including freezers), color televisions, and mobile phones were provided subsidies (13% of the selling price) in this pilot project. On 1 December 2008, the policy was extended to 14 provinces, autonomous regions, and municipalities, and washing machines were added to the three original appliance types. "Home Appliances to the Countryside" was extended nationwide in 2009, with

air conditioners, solar water heaters, motorcycles, computers, and other home appliances added to the list. A subsidy of 13% was applied to all household appliances. The policy was implemented in each region for four years, ending in the pilot areas earlier than in the other areas. Different price ceilings were set for different home appliances. Each region promoted corresponding appliances according to the operating rules of "Home Appliances to the Countryside." Therefore, the products in the experimental group included communication transmission equipment, refrigerators, computers, air conditioners, washing machines, motorcycles, and water heaters, as reported in the China Industrial Business Performance Database. The remaining household appliances in the database were used as the control group. Therefore, the experimental group might have included household appliances outside the policy list, leading to the possibility of underestimation. However, it needs to refute the effectiveness of the policy.

This study selected export and domestic sales volumes as the measurement standards for exports and domestic sales, respectively. We took the logarithm of these two variables to investigate the elasticity of domestic sales to exports. When building the DID model, we selected the home appliances dummy and the "Home Appliances to the Countryside" dummy. The value of the home appliance dummy was 1 for goods in the experimental group and 0 for goods in the control group. The policy dummy was 0 for the data before 2007 and 1 for the rest. Furthermore, this study used enterprise size, capital per capita, and TFP as control variables. We used employment level to measure the size of enterprises and a specific treatment method to take the logarithm of the number of employees of enterprises. For capital per capita data, it was necessary to take the logarithm. In addition to the existing data, this study calculated the TFP. The LP method [46] was used in this study, considering the lack of investment data in the sample. OP TFP [47] and ACF TFP [48] were selected for the robustness tests.

There were some abnormal data in the China Industrial Business Performance Database. Therefore, it was necessary to process the existing data according to specific standards, namely that data were considered abnormal if: (a) the number of employees was missing or less than eight; (b) one item of total assets, circulating assets, fixed assets, the net value of fixed assets, gross industrial output value, or product sales revenue was missing or nonpositive; (c) one item of circulating assets, fixed assets, or net value of fixed assets was higher than total assets. The sample used in this study was the data after excluding abnormal variables. Table 2 shows the descriptive statistics.

Table 2. The descriptive statistics of the main variables.

Variable	Definition	Mean Value	SE	Min	Median	Max
Exports	Logarithmic	9.935	1.527	0.000	9.243	16.903
Domestic sales	Logarithmic	10.450	1.380	2.197	10.230	17.484
Treat	Dummy	0.125	0.368	0	0	1
Policy	Dummy	0.588	0.297	0	1	1
Enterprise size	Logarithmic	5.775	1.164	2.079	4.980	12.053
Per capita capital	Logarithmic	3.312	1.162	−6.685	3.979	9.546
LP TFP	LP method	0.505	0.235	−4.478	0.156	8.155

2.2. Empirical Strategy

This study focused on the effect of "Home Appliances to the Countryside," which promoted the domestic circulation of household appliances on the exports of these goods. Therefore, we constructed an empirical model to analyze the influence of domestic consumption on foreign exports, as shown in Equation (1). FC_{it} is the logarithm of enterprise exports, DC_{it} is the logarithm of the domestic sales volume, β is the core variable of the study, namely the elasticity of domestic consumption promoting exports in the home appliance industry, x_{it} represents other control variables, including enterprise size, per capita capital, and TFP. The subscripts i and t stand for firm and time, respectively. δ_i is production fixed effect. δ_t is the time-fixed effect. ε_{it} is the robust standard error clustering

at the firm and time levels. Although this issue has been discussed in depth in previous studies, it remains essential to our research.

$$FC_{it} = \beta DC_{it} + \gamma x_{it} + \delta_i + \delta_t + \varepsilon_{it} \quad (1)$$

Based on the discussion of the impact of "Home Appliances to the Countryside" on domestic demand, we construct a DID model (Equation (2). The interaction term $Treat_i \times Date_t$ is the core independent variable of the model. $Treat_i$ is the dummy variable of whether home appliances are on the policy list. $Date_t$ is the policy implementation time dummy variable. The meanings of the remaining variables are the same as in Equation (1). We obtain the impact of "Home Appliances to the Countryside" on the domestic sales of home appliances by estimating Equation (2).

$$DC_{it} = \alpha Treat_i \times Date_t + \gamma x_{it} + \delta_i + \delta_t + \varepsilon_{it} \quad (2)$$

To further test the direct effect of "Home Appliances to the Countryside" on China's home appliance exports, we construct Equation (3), where the meanings of the variables are the same as those described above.

$$FC_{it} = \varphi Treat_i \times Date_t + \gamma x_{it} + \delta_i + \delta_t + \varepsilon_{it} \quad (3)$$

Equations (2) and (3) are, respectively, the two stages of the econometric model in which "Home Appliances to the Countryside" affects the domestic demand for home appliances and thereby affects exports. Choosing policy variables as the core independent variables can effectively overcome the interference of other unobservable variables affecting the export of enterprises and potential endogeneity problems. This enabled us to accurately identify the causal relationship between promoting domestic demand and expanding exports.

3. The Effects of "Home Appliances to the Countryside" on Domestic Demand and Exports

3.1. Benchmark Results

This section discusses the benchmark regression results, which show how "Home Appliances to the Countryside" promote the export of appliances by influencing domestic demand. Based on the estimation of Equation (1), we performed a 2SLS estimation of Equations (2) and (3). Columns (1) to (3) of Table 3 show this process. First, the ordinary least squares (OLS) regression results for the effect of domestic sales on exports in column (1) show a significant promotion effect. However, the results only show a correlation between the two and cannot identify a causal relationship. To accurately identify causality, we estimated the impact of "Home Appliances to the Countryside" on domestic sales and exports using the DID model. The potential endogeneity problem can be overcome by taking "Home Appliances to the Countryside" as the instrumental variable of domestic sales because the implementation of the policy is relatively exogenous. The results in column (2) show that the implementation of "Home Appliances to the Countryside" significantly promotes an increase in domestic sales of home appliances. The F value is 86.89, much higher than the critical value of 10, below which weak instrumental variables may exist [49], indicating that the regression results of this study are valid. Meanwhile, the interaction term coefficient in column (3) is significantly positive, underlining that the policy promotes the growth of exports. According to the data, "Home Appliances to the Countryside" increases domestic sales of home appliance products by 34% and further drives an export increase of 20.7%. The benchmark regression results show that "Home Appliances to the Countryside" significantly boosts domestic demand for home appliances and then promotes their exports. This demonstrates the complementary relationship between domestic and external demand. Furthermore, domestic and international circulation can form a benign interaction.

Table 3. The effects of "Home Appliances to the Countryside" on domestic demand and exports.

	(1)	(2)	(3)	(4)	(5)
Variable	**Export OLS**	**Domestic Sales First Stage**	**Exports**	**TFP (LP)**	**Exports 2SLS**
Domestic sales	0.438 ***				0.257 ***
	(2.76)				(2.71)
Treat × Date		0.293 ***	0.188 ***	0.175 ***	
		(3.11)	(3.77)	(4.21)	
TFP (LP)	0.208 ***	0.137 ***	0.218 ***		0.219 ***
	(2.89)	(3.12)	(2.87)		(2.92)
Enterprise size	0.116 **	0.209 **	0.128 ***	0.116 ***	0.136 ***
	(2.06)	(2.01)	(2.37)	(2.81)	(2.36)
Per capita capital	0.088 **	0.103 **	0.092 **	0.087 ***	0.108 ***
	(2.02)	(2.03)	(1.98)	(3.13)	(2.82)
Time FE	Y	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y	Y
F statistic		86.89			
R2	0.104	0.115	0.141	0.101	0.134
Obs	6720	6720	6720	6720	6720

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

Additionally, the results in column (4) of Table 3 show the impact of "Home Appliances to the Countryside" on TFP, and that policy implementation significantly improved the TFP of home appliances. We can conclude the existence of a path that promotes TFP and expands exports. Column (5) shows the results of the 2SLS estimation. The coefficient of domestic sales is significantly smaller than in column (1). This finding suggests that the OLS estimates are biased. The 2SLS estimator is the unique result that is closer to causal impacts. And we also only use the 2SLS method in our robustness tests. Table 3 shows that the coefficients of the other control variables are significantly greater than zero, indicating that TFP, enterprise size, and per capita capital have significant positive effects on enterprise exports and domestic sales.

3.2. Parallel Trend Test

We tested the parallel trend by distinguishing between treatment and control groups. The estimation results in columns (2) and (3) of Table 3 are based on the premise that there was no significant difference in domestic demand and export levels between the treatment and control groups before implementing the policy. The differences between the two groups arose mainly because of the policy implementation. This must be verified using a parallel trend test. Based on Equations (2) and (3), we replaced the time dummy variable in the interaction term with the year dummy variable to obtain Equations (4) and (5). Suppose "Home Appliances to the Countryside" significantly affected the domestic and external demand for home appliances. The coefficient of the interaction term should be insignificant before but significant after the policy implementation. The results in Table 4 prove the feasibility and rationality of the DID results and imply that "Home Appliances to the Countryside" affects domestic demand and exports. The regression results showed no significant difference between the experimental and control groups before 2008. However, "Home Appliances to the Countryside" had a lasting impact on domestic sales and exports of products within the policy scope in following several years.

$$DC_{it} = \sum_{t=2003}^{2012} \alpha^t Treat_i \times Date_t + \gamma x_{it} + \delta_i + \delta_t + \varepsilon_{it} \quad (4)$$

$$FC_{it} = \sum_{t=2003}^{2012} \varphi^t Treat_i \times Date_t + \gamma x_{it} + \delta_i + \delta_t + \varepsilon_{it} \quad (5)$$

Table 4. The parallel trend test.

	(1)	(2)	(3)
Variable	**Domestic Sales**	**Exports**	**Export Prices**
Treat × 2004	0.102	0.008	0.018
	(1.221)	(1.05)	(1.31)
Treat × 2005	0.018	0.012	0.092
	(1.29)	(1.32)	(2.11)
Treat × 2006	0.011	0.009	0.017
	(1.06)	(1.48)	(1.21)
Treat × 2007	0.015	0.021	0.029
	(1.02)	(1.16)	(1.32)
Treat × 2008	0.286 ***	0.168 ***	0.116
	(3.08)	(3.79)	(0.79)
Treat × 2009	0.315 ***	0.226 ***	−0.209
	(3.27)	(3.59)	(1.87)
Treat × 2010	0.216 ***	0.144 ***	0.108
	(2.88)	(2.96)	(0.96)
Treat × 2011	0.238 ***	0.127 ***	−0.116
	(2.38)	(2.72)	(1.72)
Treat × 2012	0.209 **	0.108 ***	0.116
	(2.11)	(2.27)	(1.18)
Other control variables	Y	Y	Y
Time FE	Y	Y	Y
Enterprise FE	Y	Y	Y
R2	0.184	0.192	0.165
Obs	6720	6720	6720

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

This study believes "Home Appliances to the Countryside" promotes the exports of home appliances when the domestic consumption subsidy expands the domestic market, which then improves the competitiveness of home appliances in the international market by improving the TFP. This channel has been examined in a previous study. However, "Home Appliances to the Countryside" also reduces the price paid by households for home appliances in the form of financial subsidies. There may have been another channel through which domestic price subsidies for home appliances reduced the export price of goods, enhancing domestic products' competitiveness in the international market. The regression in column (3) of Table 4 was performed in this study to verify the existence of such a channel. The results show that "Home Appliances to the Countryside" does not significantly decrease the price of related products. This indicates that China does not violate the relevant World Trade Organization rules when implementing "Home Appliances to the Countryside." This proves that the action mechanism of "Home Appliances to the Countryside" aims to improve the productivity of household appliance enterprises.

4. Robustness Check

4.1. Different TFP

The TFP calculated by the LP method was used for the benchmark regression in this study owing to data limitations. Considering the reliability of TFP indicators, we used enterprise TFP with different measures to test the robustness of the results of the benchmark regression. Columns (1)–(4) of Table 5 show the regression results obtained by replacing TFP in the benchmark regression with simple output per capita and with TFP calculated by the fixed effect regression, OP method, and ACF method, respectively. It could be seen that no matter which TFP was selected as the control variable, the domestic sales of home appliances still significantly promoted exports. The sign and size did not change

significantly compared to the baseline regression results, indicating that different measures of TFP did not change the regression results of this study.

Table 5. Robustness check: different TFP.

	(1)	(2)	(3)	(4)
Variable	**Exports**	**Exports**	**Exports**	**Exports**
	Output per Capita	**FE**	**OP**	**ACF**
Domestic sales	0.268 ***	0.219 ***	0.268 ***	0.258 ***
	(2.92)	(2.49)	(2.86)	(2.65)
Other control variables	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y
R2	0.122	0.115	0.126	0.125
Obs	6720	6720	6720	6720

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

4.2. Different Sample Periods

The selection of different sample periods may have affected the study results. This study selected different periods for the regression by adjusting the sample period. The results in Table 6 show that the regression results obtained by selecting different sample periods are consistent with the benchmark performance. This suggests that the different periods do not significantly interfere with our results. The increase in domestic demand for home appliances continues to play a significant role in promoting exports.

Table 6. Robustness check: different sample periods.

	(1)	(2)	(3)	(4)
Variable	**Exports**	**Exports**	**Exports**	**Exports**
	2004–2012	**2005–2012**	**2006–2012**	**2007–2012**
Domestic sales	0.273 ***	0.265 ***	0.242 ***	0.199 ***
	(2.92)	(2.49)	(2.86)	(2.65)
Other control variables	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y
R2	0.122	0.115	0.126	0.125
Obs	5820	5282	4720	4032

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

4.3. Adding Control Variables and Fixed Effects

For the benchmark regression, we selected appropriate control variables and controls for the firm- and time-fixed effects. This treatment could control for enterprise factors that did not change over time, external factors that changed over time, and enterprise factors that changed over time. Overall, however, the benchmark regression had the problem of missing variables, considering that the internationalization behavior of enterprises could affect their exports. Therefore, we added control variables for whether an enterprise had foreign capital and whether it conducted outward foreign direct investment (OFDI) to control the internationalization behavior of an enterprise and avoid the bias caused by omitted variables [50]. Additionally, enterprises receiving export tax rebates would enhance their international competitiveness. Therefore, export tax rebate behavior was introduced into the model as a control variable [51]. Data on enterprise FDI were taken from the China Industry Database. The OFDI data came from the Chinese Ministry of Commerce List of Overseas Investment Enterprises (Institutions). The export tax rebate data were obtained from the China Industry Database website. The regression results are shown in Columns

(1)–(3) of Table 7. Adding control variables to enterprises' internationalization behavior did not significantly affect the coefficient of domestic sales. Although FDI, OFDI, and export tax rebates could promote home appliance enterprises' internationalization, they did not interfere with the effect of "Home Appliance to the Countryside." Considering that the characteristics of firms changed over time, this study controlled for the enterprise-time trend fixed effect, and the results are shown in column (4). The coefficients of the core explanatory variables did not change significantly. Column (5) of Table 7 shows the results of simultaneously adding control variables related to firm nationalization behavior and controlling for enterprise-time trends. It can be seen that our results remain robust.

Table 7. Robustness check: adding control variables and fixed effects.

	(1)	(2)	(3)	(4)	(5)
Variable	**Exports**	**Exports**	**Exports**	**Exports**	**Exports**
Domestic sales	0.219 ***	0.236 ***	0.222 ***	0.229 ***	0.231 ***
	(2.87)	(2.65)	(2.89)	(2.86)	(2.39)
FDI	0.108 **				0.075 **
	(2.08)				(2.02)
OFDI		0.076 **			0.107 **
		(1.98)			(2.07)
Export tax rebate			0.236 ***		0.051 **
			(2.88)		(1.97)
Other control variables	Y	Y	Y	Y	Y
Enterprise-time trend FE				Y	Y
Time FE	Y	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y	Y
R2	0.135	0.135	0.135	0.151	0.153
Obs	5820	5820	5820	5820	5820

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

4.4. Different Areas

"Home Appliances to the Countryside" was implemented in batches. In this study, provinces were divided into three groups according to the start date of policy implementation, considering that the different start dates in different regions could have affected the policy effect. The first pilot provinces included Henan, Shandong, and Sichuan, the policies of which started at the end of 2007. The second pilot province included Qinghai, Inner Mongolia, Liaoning, Heilongjiang, Anhui, Hubei, Hunan, Guangxi, and Chongqing. The third group included the remaining provinces. The results in Table 8 show that regardless of implementing "Home Appliances in the Countryside," the promotion effect of domestic sales on exports can be seen in all groups. This finding indicates that expanding domestic sales can effectively promote products in the international market.

Table 8. Robustness check: different areas.

	First Group		**Second Group**		**Third Group**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Exports	**Domestic Sales**	**Exports**	**Domestic Sales**	**Exports**	**Domestic Sales**
Domestic sales	0.271 **		0.187 ***		0.191 **	
	(2.87)		(2.82)		(1.91)	
Treat × Date		0.193 **		0.186 **		0.25 ***
		(1.92)		(1.92)		(2.99)
Other control variables	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y	Y	Y
F statistic		68.28		66.62		65.78
R2	0.161	0.111	0.14	0.136	0.12	0.088
Obs	1220	1220	2236	2236	2364	2364

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

4.5. Different Home Appliances

In the benchmark regression, this study included nearly all household appliances involved in "Home Appliances to the Countryside." It did not consider that different household appliances received subsidies at different times in different provinces. This study refined the differences between subsidies received by different products at different time points in different regions and accurately identified the control and experimental groups focusing on the subtle differences between different home appliances in the spatial and temporal dimensions. The settings and periods in which "Home Appliances to the Countryside" are applied to different products are shown in Table 9.

Table 9. Resetting model parameters.

	Mobile Phones, Refrigerators (Including Freezers), and Color Televisions	**Washing Machines**	**Computers, Air Conditioners, Solar Water Heaters, and Motorcycles**
	First group in December 2007	Second group in December 2008	Third group in 2009
2003	0	0	0
..	0	0	0
2007	$1/12 \times 3/32$ (one month, three provinces)	0	0
2008	$11/12 \times 3/32 + 1/12 \times 14/32$ (14 provinces, December)	$1/12 \times 14/32$	0
2009	1	1	1
..	1	1	1
2011	$1\text{-}1/12 \times 3/32$	1	1
2012	$11/12 \times 29/32$	11/12	11/12

The regression results after adjusting for the recognition accuracy are shown in Table 10. The regression results of the first stage show that "Home Appliances to the Countryside" significantly promoted an increase of domestic sales of home appliances, whether the three batches of household appliances were distinguished or combined. The second-stage regression results showed that an increase in domestic sales significantly promoted exports, consistent with the benchmark regression results of this study.

Table 10. Robustness check: different home appliances.

Variable	**Exports**	**Domestic Sales**	**Exports**	**Domestic Sales**
	(1)	**(2)**	**(3)**	**(4)**
Domestic sales	0.262 ***		0.259 ***	
	(2.75)		(2.88)	
First round		0.391 *		
		(1.96)		
Second round		0.133 ***		
		(7.85)		
Third round		0.270 **		
		(2.37)		
Three-round consolidation				0.289 ***
				(3.08)
Other control variables	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Enterprise FE	Y	Y	Y	Y
F statistic		89.28		86.87
R2	0.115	0.163	0.126	0.138
Obs	5820	5820	5820	5820

Notes: The t-values are shown in parentheses. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively. (Standard errors clustered at the four-digit code-product level).

5. Conclusions

This study focused on the relationship between domestic demand and exports. Implementing "Home Appliances to the Countryside" provided useful evidence to examine this relationship. This study considered the home appliance industry and the effect of "Home Appliances to the Countryside" as a microcosm of the economy and the interaction between domestic consumption and exports. The empirical results showed that the fiscal subsidy policy promoted an increase in domestic demand for related products and expanded their exports, which occurred through the channel of productivity growth. Meanwhile, a series of robustness tests proved the robustness of the results. Existing studies have fully discussed the phenomenon wherein an increase in exports expands domestic demand through the channel of income growth. This study argued for the driving effect of domestic demand on exports at a relative micro-industry level. To some extent, we provided evidence that the relationship between domestic consumption expansion and exports was simply substitutional and complementary, as part of which each promoted the other. This paper complements the literature in the field. Similar policies to expand domestic demand can directly promote domestic demand and empower exports. To some extent, this provides a basis for China to engage in a dual circular development pattern. Of course, there are some limitations in this study. We only rely on the conclusions of existing research and empirical analysis to discuss this problem, and did not build a theoretical model. A micro-enterprise model facing domestic and international markets can be further constructed. Then, the impact of government subsidies on the export behavior of enterprises could be discussed. Further, the mechanism of government consumption subsidies could also be further researched. This also provides a direction.

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