

Martyshev, Pavlo; Grigoriadis, Theocharis; Nivievskiy, Oleg; Kolodiazhnyi, Ivan

**Working Paper**

## The Russian grain trap food security & political development in sub-Saharan Africa

Discussion Paper, No. 2026/11

**Provided in Cooperation with:**

Free University Berlin, School of Business & Economics

*Suggested Citation:* Martyshev, Pavlo; Grigoriadis, Theocharis; Nivievskiy, Oleg; Kolodiazhnyi, Ivan (2026) : The Russian grain trap food security & political development in sub-Saharan Africa, Discussion Paper, No. 2026/11, Freie Universität Berlin, School of Business & Economics, Berlin, <https://doi.org/10.17169/refubium-51935>

This Version is available at:

<https://hdl.handle.net/10419/340110>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# **The Russian Grain Trap**

Food Security & Political Development in sub-Saharan Africa

Pavlo Martyshev

Theocharis N. Grigoriadis

Oleg Nivievskiy

Ivan Kolodiazhnyi

School of Business & Economics

Discussion Paper

Economics

2026/11

# The Russian Grain Trap: Food Security & Political Development in sub-Saharan Africa\*

Pavlo Martyshev<sup>1†</sup>    Theocharis N. Grigoriadis<sup>2‡</sup>    Oleg Nivievskiy<sup>1,3,4§</sup>  
Ivan Kolodiazhnyi<sup>1¶</sup>

## Abstract

The weaponization of agricultural trade has once again emerged as critical in the study of modern geopolitics due to Russia's full-scale invasion of Ukraine. Although Russia has used its wheat exports as a means of enhancing its geopolitical influence over countries in the Global South, evidence on the impact of such a policy is scarce. This paper assesses the impact of reliance on Russian and Ukrainian wheat imports on food security and political development in sub-Saharan African countries. The panel data for the analysis come from 35 African countries between 2005 and 2024. The Bartik-style shift-share instrumental variables (IV) model utilizes exogenous variables derived from the historical shares of wheat that African countries imported from Russia and Ukraine multiplied by the export contractions caused by geopolitical conflicts in 2014 (Crimea annexation) and 2022 (full-scale invasion of Ukraine). The dependence on Russian wheat has had a uniquely adverse impact upon the development of sub-Saharan Africa, whereas this has not been the case for the dependence on Ukrainian wheat. Prior to 2022, the dependence on Russian wheat had no significant impact upon the reduction of undernourishment in Africa, but had a significant impact on the rise of political instability. After 2022, though, the Russian wheat played a crucial role in the food insecurity within the region. While democratic indices remained unaffected by Russian wheat, other geopolitical factors such as U.S. development aid and Chinese development finance were not able to counter the negative effects of Russian wheat exports. Our findings identify an independent vector of autocratic influence enabled through Russian agricultural exports. For sustainable political development within sub-Saharan Africa, the diversification of staple food suppliers is urgently required.

---

\*Thanks are due to Vasileios Brouzoukis for a wonderful research assistance.

<sup>†1</sup> Kyiv School of Economics (KSE), KSE Agrocenter. Email: pmartyshev@kse.org.ua

<sup>‡2</sup> Freie Universität Berlin, Economics Department & Institute for East European Studies. Email: theocharis.grigoriadis@fu-berlin.de

<sup>§1</sup> Kyiv School of Economics (KSE), KSE Agrocenter; <sup>3</sup> European University Viadrina (Frankfurt-Oder), Competence Center for Ukrainian Studies; <sup>4</sup> Freie Universität Berlin, Institute for East European Studies. Email: onivievskiy@kse.org.ua

<sup>¶1</sup> Kyiv School of Economics (KSE), KSE Agrocenter. Email: ikolodiazhnyi@kse.org.ua

# 1 Introduction

The weaponization of food or hunger as a military or political strategy has been extensively used in human history [Álvarez, 2024, Messer and Cohen, 2024, Schmitt, 2022]. Various forms of sieges, blockades or starvation have been historically implemented in both intra- and interstate conflicts. In the more globalized world that has emerged since World War II, with a focus on international human rights and the reduction of global poverty, the instrumentalization of food as a geopolitical tool has gained many supporters. For instance, the U.S. Food for Peace program (PL 480) explicitly used grain exports during the Cold War to align developing nations with Western interests [Diven, 2001, Wallerstein, 1980]. Similarly, the 2007—2008 global food price crisis showed how market volatility could trigger regime instability. Recently, the rapid expansion and consolidation of Russian wheat imports into Africa has emerged as another focal point of this discussion. While widely perceived as a calculated strategy to expand Moscow’s geopolitical influence in the Global South following its February 2022 invasion of Ukraine [Martyshchev et al., 2023, Musvanhiri, 2024], this policy narrative remains largely anecdotal. The discourse surrounding the concept of Russian “grain diplomacy” lacks the empirical evidence required to validate these claims.

For the last two decades, Russia and Ukraine have supplied staple commodities to African countries. Between the 2005–2007 and 2019–2021 periods, Russia increased its share of total wheat imports from Africa from 13% to 24%. Ukraine experienced a similar increase in its share of wheat imports to Africa from 5% to 16%. The February 2022 full-scale invasion of Ukraine by Russian forces drastically altered the landscape between the two countries. Russia embarked on a deliberate effort to capture the market share for wheat that was lost by Ukraine due to the blockades and attacks on Ukrainian agricultural infrastructures. Russia’s share of the African wheat market has surged to 32% in the period following the Russian invasion of Ukraine. In contrast, Ukraine’s share of the market has plummeted to only 8%. Such a decline is the result of Russia’s deliberate consolidation of its position as the leading exporter of wheat to Africa since 2022. In addition to growing export volumes, Russia has significantly diversified the geography of its supplies by shifting from traditional markets in North Africa to new markets in sub-Saharan Africa over the last decade [Glauber and Laborde, 2023, Götz and Svanidze, 2023]. At the same time, this process was accompanied by the intensive consolidation and nationalization of Russian grain exports with the appearance and dominance of large state operators. For example, only two companies accounted for more than 50% of Russian exports in the 2023/2024 season. Moreover, one of the two companies, Grain Gate, was established and made its first export operation only in September 2022. The other exporter, Rodnyie Poly, has been undergoing nationalization. Sanctions on Russia because of its war in Ukraine facilitated this process as large international traders left the Russian market. Furthermore, stringent market regulations for the private grain business facilitated increasing control of grain exports by the Kremlin [Melkadze et al., 2024].

The increasing centralization of Russian wheat exports serves a dual imperative: generating essential revenue to finance the war in Ukraine while functioning as an active instrument of grain

diplomacy to cultivate geopolitical alliances. A striking example of this strategy was Russia’s delivery of 200,000 tons of free grain to six African nations in early 2024 (Somalia, the Central African Republic, Mali, Burkina Faso, Zimbabwe, and Eritrea). A striking example of this geopolitical strategy was observed in early 2024, when Russia gifted 200,000 tons of free grain to six African nations (Somalia, the Central African Republic, Mali, Burkina Faso, Zimbabwe, and Eritrea). In exchange for such agricultural subsidies, Russia tries to influence the African votes within the United Nations on resolutions that condemn Russia’s invasion of Ukraine [Götz et al., 2023, Musvanhiri, 2024, Tramsen, 2026]. The success of this strategy, however, is not guaranteed due to various domestic variables within the African nations such as regime type and institutional capacity that may impact their voting outcomes. These domestic variables include the type of government that exists within those nations (democracy versus autocracy).

In this paper, we investigate the hypothesis that Russia’s geopolitical strategy towards Africa is a “grain trap”. More specifically, we explore the relationship between the institutional characteristics of African nations, their internal food security, and their dependence on Black Sea wheat. Specifically, this study investigates three main aspects of this relationship between Russia and sub-Saharan Africa. First, we examine how Russia has come to dominate the grain markets of Africa’s food-insecure nations since 2014. Second, we test assess whether Russian wheat is systematically directed toward autocratic regimes, while Ukrainian exports favor nations with higher democracy indices. Third, we analyze whether increased dependence on Russian agricultural imports is causally linked to deteriorating political stability, reflecting the broader institutional costs of integration into the Kremlin’s geopolitical orbit.

The paper is structured as follows. Section 2 includes a literature review on the geopolitical context of Russian expansion in the African grain market. Section 3 describes the data and econometric methodology for assessing the political and economic determinants of Ukrainian and Russian wheat imports into Africa. Section 4 includes a description of the modeling results. Finally, Section 5 summarizes and suggests directions for further research.

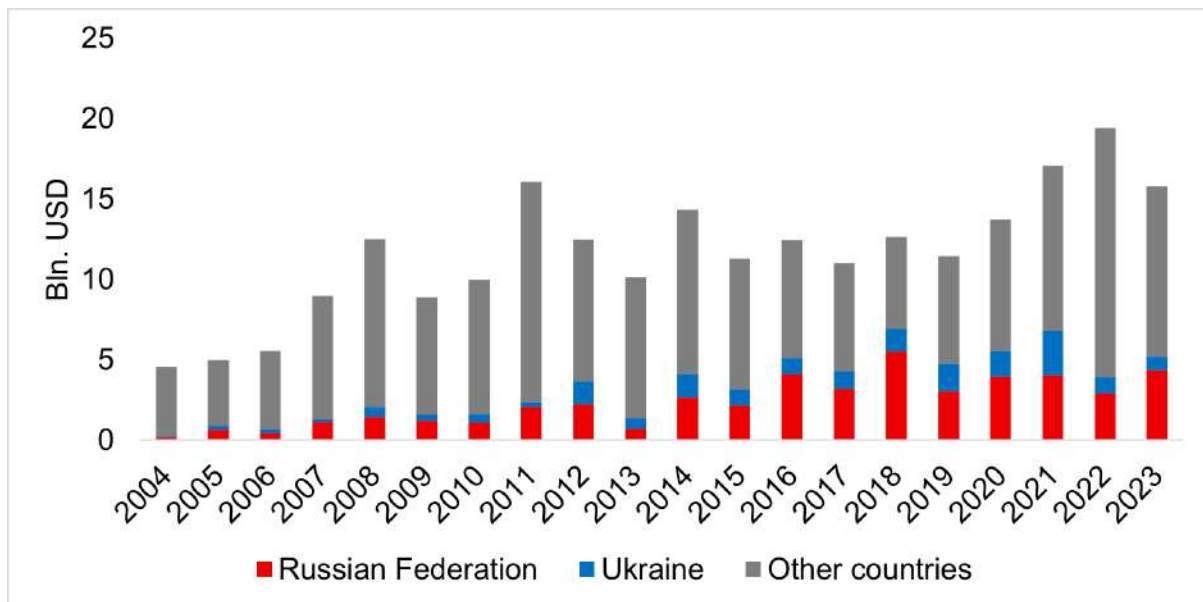
## **2 Ukraine vs. Russia in sub-Saharan Africa**

While the geopolitical foundations of Russia’s agricultural expansion in Africa are historically entrenched, existing empirical literature has predominantly constrained its focus to the immediate supply shocks following the 2022 full-scale invasion. As a result, the long-term political and economic determinants driving the geographic distribution of Black Sea grain exports, particularly in the decade following the 2014 annexation of Crimea, remain understudied. By analyzing this new temporal horizon, our study corroborates an empirical gap and provides the first comprehensive assessment of how these structural shifts have paved the way toward the weaponization of agricultural trade.

Over the past two decades, wheat imports into Africa have grown rapidly and this growth has coincided with increased wheat production in both Ukraine and Russia, strengthening their positions in the African grain market. Moreover, Russian wheat imports began to actively

outpace Ukrainian wheat imports starting in 2014 (Figure 1), which could be due to temporary occupation of Crimea and parts of the Donbass region of Ukraine by Russia in 2014.

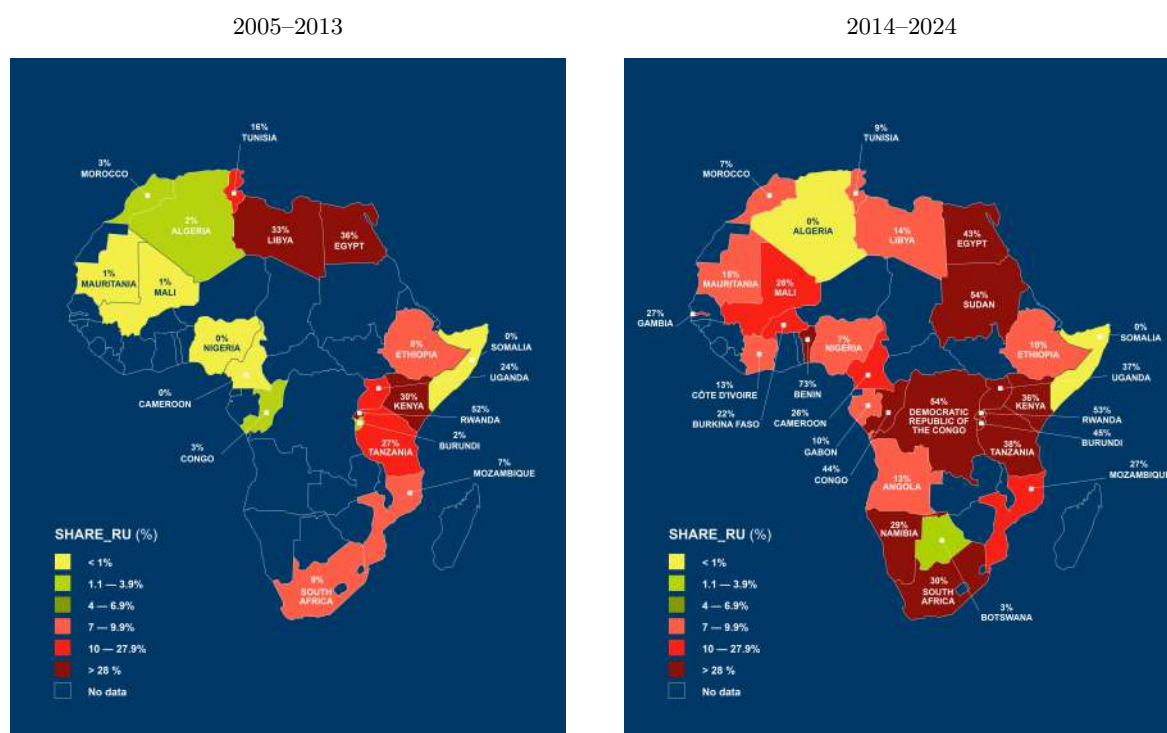
**Figure 1:** African Wheat Imports from Ukraine, Russia, and Other Origins



Note: Source: Created by the authors based on ITC Trade Map data

Furthermore, Russian expansion in Africa looks strategic. Figure 2 shows that the number of African countries purchasing Russian wheat increased significantly in the post-2014 period, as did Russia’s shares in imports in these countries: from about 12% in the 2005—2013 period to about 26% in the 2014—2024 period. This growth was driven mainly by higher grain flows to sub-Saharan Africa, including several landlocked countries such as the Democratic Republic of Congo, Mali, Burkina Faso, and Uganda. Transportation of bulky grain to these remote destinations is problematic due to the poor transport infrastructure inside the continent. This supports the idea that strong diversification of Russian wheat exports may not only be market-driven but also reflects political motives.

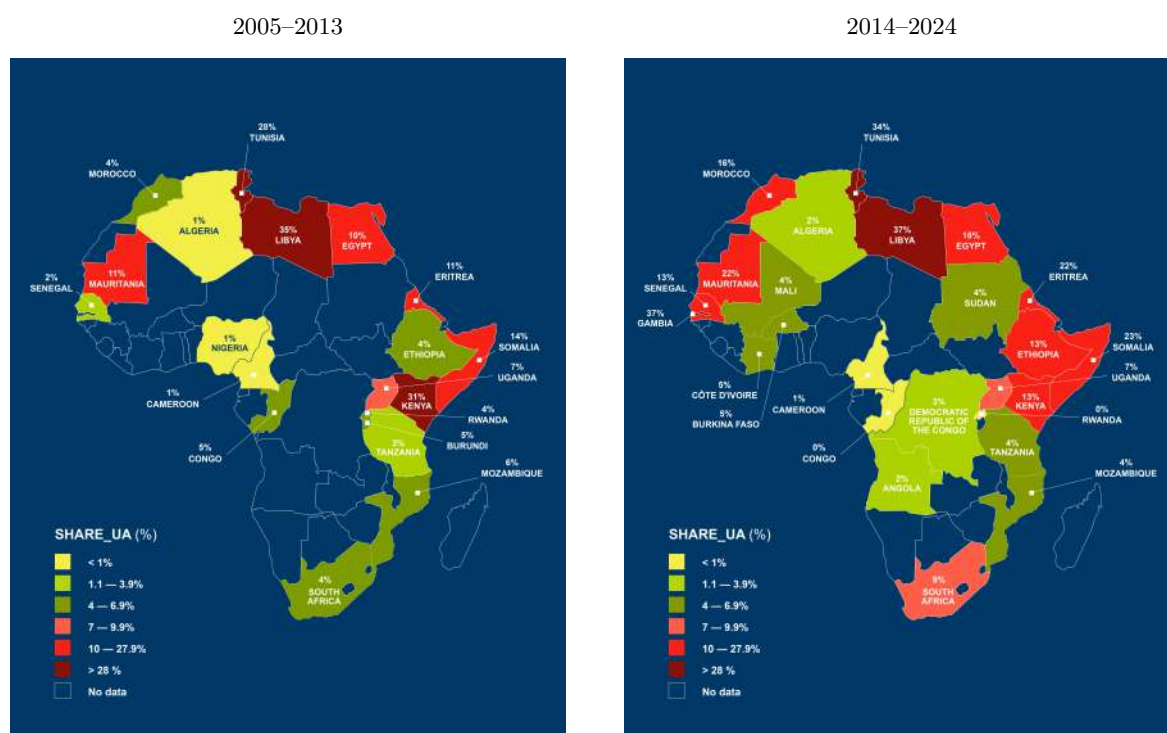
**Figure 2:** The Share of Russia in African countries' Wheat Imports



Note: Source: Authors' own elaboration based on International Trade Centre (ITC) data.

At the same time, the growth of Ukrainian wheat exports to the African continent was more moderate. (Figure 3) Among the countries importing Ukrainian wheat, Ukraine's average annual market share grew from approximately 9% in the 2005—2013 period to roughly 13% during the 2014—2021 period. However, following the outbreak of full-scale war and the subsequent blockade of Black Sea ports in 2022, this share dropped significantly to approximately 6% for the 2022—2024 period. As it turns out, the growth that Ukraine experienced in its market between 2014 and 2021 was mainly due to an increase in sales in traditional markets that were established prior to 2014, such as Egypt, Ethiopia, and Mauritania. In newer markets, however, Ukraine had difficulty gaining a foothold in the markets, as there was competition with Russian wheat exports.

**Figure 3:** The Share of Ukraine in African countries' Wheat Imports

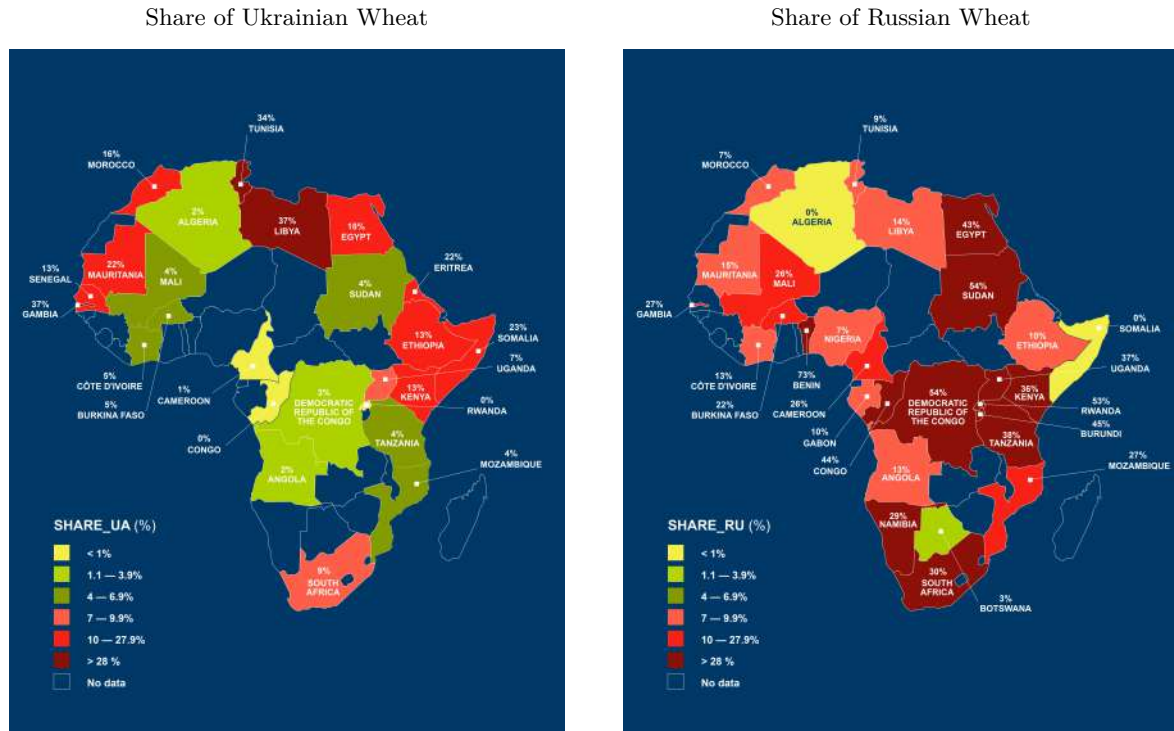


Note: Source: Authors' own elaboration based on International Trade Centre (ITC) data.

Despite the growing volumes of wheat imports, the continent continues to struggle with curbing domestic hunger. The Prevalence of Undernourishment (PoU) in Africa has remained roughly stable at around 20% in recent years. However, the total number of undernourished individuals within Africa has surged from 183 million in 2004 to over 292 million in 2023 alone, thereby deepening the continent's dependence on staple food imports [FAO et al., 2024]. Another related factor is the deterioration of the quality of institutions. The average democracy index showed a marginal decrease from 4.22 in the 2005–2013 period to 4.18 between 2014 and 2024. For instance, the average score for the democracy index has declined from 4.22 in the 2005–2013 period to 4.18 between 2014 and 2024. Similarly, the political stability index has declined from an average of -0.54 in the 2005–2013 period to -0.69 in the 2014–2022 period [World Bank, 2023].

Figure 4 illustrates the heterogeneous relationships between indicators of food security, democracy, and political stability within African countries, and their dependence upon wheat imports from both Ukraine and Russia. The prevalence of undernourishment and the democracy index, for instance, have only weak relationships with Black Sea wheat imports. An association between political stability and the dependence upon Russian wheat is evident. The political turmoil that exists within several African countries has forced those nations to rely upon imports of Russian wheat. The pronounced heterogeneity that is seen in these variables suggests that analyses based upon simple correlations between these variables are insufficient for understanding any relationships between them; more sophisticated analyses are required to determine the forms of causal inference.

**Figure 4:** The Share of Russia and Ukraine in African countries' Wheat Imports (2014—2024 Period)



Note: Source: Authors' own elaboration based on International Trade Centre (ITC) data.

### 3 Methodology

#### 3.1 Data collection

The panel data assembled for this study features 35 countries from all the African sub-regions and covers the period between 2005 and 2024. The data consist of trade, governance, food security, and aid indicators for each country. Due to the varying availability of data for certain variables from different sources, the panel is unbalanced but provides consistent coverage of key variables necessary for empirical analysis.

The three main indicators used as the dependent variable for this data collection are the Democracy Index from the Economist Intelligence Unit, the Prevalence of Undernourishment from the FAO, and the Political Stability and Absence of Violence/Terrorism Index from the World Bank's Worldwide Governance Indicators. Together, these indicators allow us to examine how wheat import dependence affects political, social, and food security outcomes.

The independent variables used for this study capture structural trade dependencies and broader economic conditions. Wheat import volumes from Ukraine, Russia, other exporters are used to calculate the share of Black Sea origin in the total wheat imports of African countries. Economic development is measured using GDP per capita (constant 2021 international dollars, FAOSTAT), while external financial flows are proxied by U.S. foreign aid (U.S. Foreign Assistance database) and Chinese development finance (China Aid Data database).

### 3.2 Empirical Strategy

To evaluate the causal effect of wheat import dependence on African development, an instrumental variables estimation will be used with Bartik-style shift-share instruments [Bartik, 1991, Borusyak et al., 2022, Goldsmith-Pinkham et al., 2020]. This statistical approach helps address the indisputable endogeneity that exists between bilateral wheat import volumes and domestic institutional or economic conditions. For instance, nations with fragile institutions may simultaneously experience heightened political instability and disproportionately attract imports from specific geopolitical suppliers, severely confounding standard OLS estimates. To isolate the causal mechanism, we construct instruments that interact exogenous, time-varying global supply shocks—specifically, the war-induced export contractions—with pre-determined, country-specific historical import shares [Autor et al., 2013].

The baseline models take the form of fixed-effects panel regressions with country and year fixed effects:

$$Y_{it} = \alpha + \beta M_{it} + \gamma X_{it} + \mu_i + d\lambda_t + \varepsilon_{it},$$

where  $Y_{it}$  denotes the dependent variable (Democracy Index, Political Stability or Prevalence of Undernourishment),  $M_{it}$  is the potentially endogenous measure of wheat import dependence (Share\_UA, Share\_RU, or their combinations), and  $X_{it}$  includes control variables such as lagged GDP per capita, U.S. foreign aid, and Chinese development finance. Country fixed effects ( $\mu_i$ ) absorb time-invariant heterogeneity, while year fixed effects ( $d\lambda_t$ ) capture global shocks.

All specifications include year fixed effects to account for common shocks, such as international food price crises or climate events, and country fixed effects to absorb time-invariant heterogeneity across African states.

Additionally, we define country-specific exposure measures as:

$$z_{ua,t} = w_{ua} \times shock_{ua,t}, \quad z_{ru,t} = w_{ru} \times shock_{ru,t},$$

where  $w_{ua}$  and  $w_{ru}$  are the pre-determined average import shares of Ukraine and Russia in each country’s wheat imports, respectively, and  $shock_{ua,t}$  and  $shock_{ru,t}$  are exogenous time-varying shocks capturing supply disruptions from Ukraine and Russia, respectively. These shocks are scaled to the [0,1] interval, where values closer to zero represent greater disruptions to trade flows. For Ukraine, the shocks capture the deterioration of export capacity due to the full-scale invasion in 2022 followed by the blockade of maritime infrastructure. For Russia, the shocks reflect the war-related effects during 2022–2023 based primarily on the redistribution of wheat export flows to partner countries mentioned above. For Ukraine, shock values are set at 0.4, 0.6, and 0.7 for 2022, 2023, and 2024, respectively, while for Russia shock values are set at 0.9 for 2022 and 2023.

Composite measures are also constructed to capture joint exposure:

$$z_{tot,t} = z_{ua,t} + z_{ru,t}, \quad z_{mix,t} = z_{ua,t} - z_{ru,t}.$$

## Alternative Shock Specification

In addition to the baseline shocks capturing only the 2022–2024 full-scale invasion period, a second specification extends the time horizon to incorporate the earlier disruptions following the annexation of Crimea and the onset of hostilities in Donbas. In this extended setting, Ukraine and Russia are each assigned smoother, longer-term shock series to capture both the 2014–2015 conflict period and subsequent years of partial adjustment in trade flows. Specifically, the alternative shocks are defined as

$$shock_{ua,t}^{(14)} = \begin{cases} 0.95, & 2014\text{--}2021, \\ 0.40, & 2022, \\ 0.60, & 2023, \\ 0.70, & 2024, \end{cases} \quad shock_{ru,t}^{(14)} = \begin{cases} 0.98, & 2014\text{--}2021, \\ 0.90, & 2022\text{--}2023, \\ 1.00, & 2024. \end{cases}$$

Corresponding exposure instruments are constructed as

$$z_{ua,t}^{(14)} = w_{ua} \times shock_{ua,t}^{(14)}, \quad z_{ru,t}^{(14)} = w_{ru} \times shock_{ru,t}^{(14)}, \quad z_{tot,t}^{(14)} = z_{ua,t}^{(14)} + z_{ru,t}^{(14)}, \quad z_{mix,t}^{(14)} = z_{ua,t}^{(14)} - z_{ru,t}^{(14)}.$$

These “Crimea-2014” shocks and their derived instruments are used in robustness analyses and FE–IV specifications to test whether the empirical results remain consistent when accounting for the earlier phase of Russian aggression and the associated long-run disruptions to Black Sea grain exports.

## Note on Lagged Specifications

To capture delayed responses, the endogenous wheat-dependence measure enters with a one-year lag. However, employing a fully lagged shift-share instrument is computationally infeasible: within our unbalanced panel, the lagged Bartik terms become perfectly collinear with the two-way fixed-effects structure, resulting in an under-identified system. To retain an estimable model, we instrument the lagged exposure with the interaction terms of the contemporaneous shocks. Since the year fixed effects will account for time-series variation in the data, the lagged exposure will be leveraged for estimation. Although this specification precludes any discussion of time-series causality, it does allow us to provide supplementary evidence regarding the persistent impacts of the identified vulnerability. The contemporaneous FE–IV models therefore serve as our primary causal benchmark.

## 4 Results

### 4.1 Baseline Models

We estimate panel fixed-effects models over the 2022–2024 window by isolating the export disruption shock generated by the full-scale Russian invasion of Ukraine. The dependent variables capture three distinct outcomes: democracy, prevalence of undernourishment, and political stability. Across our baseline specifications (Tables 1–8), the results reveal a clear asymmetry: African development is driven by exposure to Russian wheat exports, while Ukrainian wheat dependence remains statistically insignificant.

In the democracy models, there is no robust association between the dependence on Russian wheat and the democratic regime type. Coefficients are small and sensitive to specification, while Ukrainian wheat dependence is consistently insignificant. The inclusion of lagged GDP per capita, U.S. foreign aid, and Chinese development investment has no impact on these findings. We show that that trade-based food exposure does not systematically reshape the democratic regime type, even under conditions of acute supply disruption. The Russian grain trap, therefore, does not operate through democratic backsliding.

The mechanism becomes visible, however, when it comes to socio-economic outcomes. In the undernourishment models, Russian wheat dependence is statistically significant and positively associated with food insecurity during the 2022–2024 window. Countries with a higher share of Russian wheat imports experienced significant increases in undernourishment following sanctions and the collapse of Black Sea trade channels. The coefficient magnitude remains stable across specifications with alternative controls. Ukrainian wheat dependence, however, remains insignificant. The humanitarian consequences of the 2022 shock are, therefore, Russia-specific.

The political stability models further clarify the logic of dependence. In the baseline 2022–2024 specification, Russian wheat exposure is statistically significant and associated with shifts in political stability. However, the sign in this short-run window is positive, suggesting heterogeneous or delayed immediate responses to the sudden supply shock rather than instant institutional collapse. The association is robust when we add variables related to income controls and external financing. Ukrainian dependence remains statistically insignificant. The political stability channel is thus uniquely tied to Russian export concentration and it sets the stage for analyzing the development of these political effects over time.

Importantly, U.S. foreign aid and Chinese development investment do not have statistically significant effects on either of the outcomes. Their coefficients remain small and unstable, which suggests that short-run political and social responses to trade shocks are not offset by contemporaneous external financial inflows. Agricultural trade exposure rather than aid or investment appears to be the dominant transmission mechanism under conditions of major supply collapse.

Overall, the baseline results underpin the core of the Russian grain trap. Concentration in Russian wheat imports does not systematically influence regime type, but it does transmit significant

socio-economic and political costs when wheat export flows are disrupted. The dependence on Ukrainian wheat does not produce statistically significant results. This asymmetry is a central element of our analysis. African vulnerability arises not from generalized Black Sea exposure, but from a consolidated dependence on Russian agricultural exports. Finally, the temporal analysis that accompanies these findings reveals that, while humanitarian costs are concentrated in the 2022 rupture, the political dimension reflects deeper structural exposure accumulated over time.

**Table 1:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 1: Baseline

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.930 (2.087)	2.094* (1.186)	-16.020 (10.100)	4.114 (4.109)	-2.199** (0.883)	-0.0203 (0.262)
Share UA / share RU	0.226 (0.211)	0.549** (0.224)	1.086 (0.978)	4.400*** (1.035)	0.118 (0.0988)	0.476*** (0.0541)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-1.736	-3.007	-1.320	-3.419	-1.858	-4.233
First-stage $F$ (excluded IVs)	4.780	4.780	4.250	4.250	4.270	4.270
KP rk $F$ -stat	1.810	19.440	5.170	34.380	5.220	34.110

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 2:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 2: Lagged GDP per capita

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-0.837 (1.521)	2.640* (1.362)	-13.360* (7.960)	5.341 (3.255)	-1.575** (0.691)	0.284 (0.301)
Share UA / share RU	0.222 (0.206)	0.522** (0.242)	1.143 (0.975)	4.478*** (0.917)	0.114 (0.0920)	0.445*** (0.0661)
Lagged GDP per capita	0.000138** (0.0000674)	0.000107* (0.0000623)	0.000300 (0.000503)	0.0000140 (0.000348)	0.000124*** (0.0000418)	0.0000960*** (0.0000371)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-1.202	-3.468	-0.661	-4.032	-0.979	-5.314
First-stage $F$ (excluded IVs)	3.440	3.440	3.720	3.720	3.720	3.720
KP rk $F$ -stat	1.720	25.320	4.300	34.990	4.300	34.990

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 3:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 3: US Foreign Aid and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.527 (1.041)	1.390* (0.839)	-11.520 (7.033)	3.558 (3.961)	-1.518*** (0.506)	0.144 (0.326)
Share UA / share RU	0.213 (0.182)	0.592*** (0.206)	1.011 (0.840)	4.364*** (0.996)	0.111 (0.092)	0.481*** (0.059)
US Foreign Aid	-0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
Chinese Foreign Aid	-0.000* (0.000)	-0.000 (0.000)	-0.002* (0.001)	-0.001 (0.001)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-1.312	-3.030	-0.716	-3.348	-0.911	-4.307
First-stage $F$ (excluded IVs)	7.040	7.040	5.480	5.480	5.510	5.510
KP rk $F$ -stat	2.190	24.090	4.720	29.890	4.840	29.870

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 4:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 4: US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.611 (1.168)	1.390* (0.838)	-12.530 (8.144)	3.492 (3.910)	-1.548*** (0.524)	0.156 (0.302)
Share UA / share RU	0.221 (0.199)	0.592*** (0.207)	1.061 (0.962)	4.420*** (1.024)	0.113 (0.095)	0.470*** (0.056)
US Foreign Aid	-0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-1.478	-3.031	-0.910	-3.446	-0.958	-4.123
First-stage $F$ (excluded IVs)	7.180	7.180	5.830	5.830	5.870	5.870
KP rk $F$ -stat	1.880	23.610	4.160	32.330	4.260	32.260

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 5:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Model, Variation 5: Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.792 (1.861)	2.094* (1.185)	-14.580* (8.538)	4.228 (4.210)	-2.153** (0.840)	-0.042 (0.274)
Share UA / share RU	0.218 (0.192)	0.549** (0.224)	1.031 (0.852)	4.342*** (1.005)	0.116 (0.095)	0.487*** (0.058)
Chinese Foreign Aid	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-1.512	-3.003	-1.041	-3.320	-1.764	-4.429
First-stage $F$ (excluded IVs)	4.620	4.620	3.900	3.900	3.910	3.910
KP rk $F$ -stat	2.060	19.800	5.400	32.410	5.440	32.240

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 6:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Model, Variation 6: Lagged GDP per capita & US Foreign Aid & Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.364 (1.120)	1.998* (1.119)	-11.770* (6.518)	5.101 (3.989)	-1.348*** (0.491)	0.379 (0.350)
Share UA / share RU	0.219 (0.182)	0.562** (0.221)	1.050 (0.798)	4.436*** (0.888)	0.107 (0.082)	0.454*** (0.075)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
US Foreign Aid	0.000 (0.000)	0.000 (0.000)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
Chinese Foreign Aid	-0.000* (0.000)	0.000 (0.000)	-0.003** (0.001)	-0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-1.172	-3.450	-0.404	-3.942	-0.700	-5.544
First-stage $F$ (excluded IVs)	4.580	4.580	4.390	4.390	4.390	4.390
KP rk $F$ -stat	2.171	17.509	4.921	18.414	4.921	18.414

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country and year fixed effects. Standard errors clustered at the country level in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 7:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 7: Lagged GDP per capita & US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-1.286 (1.235)	1.939* (1.075)	-12.062 (7.737)	5.238 (4.017)	-1.363** (0.544)	0.346 (0.320)
Share UA / share RU	0.229 (0.204)	0.556** (0.220)	1.132 (0.973)	4.483*** (0.908)	0.112 (0.091)	0.443*** (0.069)
Lagged GDP per capita	0.000* (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)
US Foreign Aid	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-1.331	-3.354	-0.590	-4.037	-0.800	-5.264
First-stage $F$ (excluded IVs)	4.550	4.550	4.420	4.420	4.420	4.420
KP rk $F$ -stat	1.530	21.860	3.360	27.130	3.360	27.130

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 8:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation 8: Lagged GDP per capita & Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-0.816 (1.354)	2.697* (1.380)	-12.351* (6.367)	5.278 (3.241)	-1.518** (0.615)	0.299 (0.291)
Share UA / share RU	0.212 (0.185)	0.532** (0.247)	1.054 (0.798)	4.431*** (0.902)	0.109 (0.083)	0.457*** (0.073)
Lagged GDP per capita	0.000** (0.000)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)	0.000*** (0.000)	0.000*** (0.000)
Chinese Foreign Aid	0.000* (0.000)	0.000 (0.000)	-0.000** (0.000)	0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-1.033	-3.604	-0.431	-3.937	-0.832	-5.594
First-stage $F$ (excluded IVs)	3.460	3.460	3.680	3.680	3.680	3.680
KP rk $F$ -stat	2.250	20.260	5.560	23.630	5.560	23.631

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 9:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Lagged Model, Variation 1: Baseline

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-2.970*	-2.449*	-19.110***	2.126	-1.984***	0.772***
	(1.609)	(1.364)	(4.243)	(3.052)	(0.490)	(0.228)
Share UA / share RU	-0.091	0.078	-9.748***	4.345***	-1.265***	0.564***
	(0.147)	(0.105)	(2.649)	(0.725)	(0.230)	(0.049)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-2.212	-1.535	-10.948	-3.127	-19.515	-8.658
First-stage $F$ (excluded IVs)	5.270	10.700	12.320	70.200	12.360	70.350
KP rk $F$ -stat	3.340	9.550	7.320	28.090	7.340	28.190

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 10:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)

Baseline Lagged Model, Variation 2: Lagged GDP per capita

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.222*	-2.687*	-19.090***	1.410	-2.004***	0.359
	(1.666)	(1.613)	(4.239)	(2.499)	(0.467)	(0.240)
Share UA / share RU	-0.123	0.076	-9.858***	4.209***	-1.135***	0.485***
	(0.304)	(0.158)	(2.913)	(0.633)	(0.274)	(0.044)
Lagged GDP per capita	0.000	0.000	-0.000	0.000	0.000	0.000***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	213	213	215	215
$R^2$ (centered)	-2.615	-1.801	-11.140	-2.898	-16.246	-6.200
First-stage $F$ (excluded IVs)	4.660	7.410	11.370	58.270	11.410	57.990
KP rk $F$ -stat	3.430	8.790	6.130	25.050	6.140	25.130

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

## 4.2 Temporal Heterogeneity and the Evolution of the Russian Grain Trap (2014–2024)

While the baseline specifications represent the impact of the 2022 Russian invasion of Ukraine, the dependence of African countries on Russian wheat exports emerged as a result of the initial geopolitical disturbance that began in 2014. Since the annexation of Crimea, the war in Donbas, and the introduction of Western sanctions on Russia, Russian wheat exports have experienced a moderate decrease in relation to pre-2014 levels of export. The impact of these earlier geopolitical disturbances on Russian wheat exports may thus be incorporated into the model by extending the variable that represents that shock back in time to represent those earlier years. For 2014–2021, the variable for Russian wheat exports is represented by a shock magnitude of 0.98 (indicating a 2 percent decrease in average yearly exports relative to pre-2014 levels), and the variable for Ukrainian wheat exports is represented by a shock magnitude of 0.95 (indicating a 5 percent decrease in average yearly exports relative to pre-2014 levels). Each of these values is significantly different from the shock magnitude for Ukrainian wheat of 0.995 for 2022–2024. This underscores the difference between moderate export decreases relative to pre-2014 levels and the dramatic decrease in Russian wheat exports as a result of the invasion of Ukraine in 2022. Our calibration, therefore, distinguishes between moderate cumulative disturbance (2014–2021) and extreme supply rupture (2022–2024), while preserving comparability within the identification strategy.

A re-estimation of the models within this extended numerical framework that incorporates earlier geopolitical disturbances sheds new light on the Russian grain trap. With respect to democratic institutions, the coefficients of Russian wheat dependence remain statistically insignificant across all specifications, both under the 2022 shock and the cumulative 2014–2024 exposure window. Thus, the grain trap does not operate through regime transformation and, therefore, it does not generate systematic shifts in democratic status.

The food security results appear to be nonlinear. The baseline models that include only the 2022–2024 window suggest that Russian wheat dependence is statistically significant and has a positive effect on the prevalence of undernourishment. Nevertheless, the addition of the years 2014–2021 with the 0.98 annual Russian wheat shock makes that coefficient statistically insignificant. Thus, the data indicate that the 2 percent disruptions in Russian wheat exports that occurred each year between 2014 and 2021 were not sufficient to facilitate food insecurity in Russia-dependent countries. Furthermore, the coefficient for Ukrainian dependence is also statistically insignificant. Hence, the food security problem is specific to Russian wheat dependence rather than to general dependence on Black Sea wheat.

The most consistent findings emerge from the estimations of political stability models. In the baseline specification that includes only the window of 2022–2024, the coefficient of Russian wheat dependence is ambiguous. However, when the 0.98 coefficient for the years 2014–2021 for Russian wheat dependence is included in the model, that coefficient becomes statistically significant and negative. Thus, the model indicates that the stability issues experienced by Russian wheat-dependent countries began to accumulate between 2014 and 2021, when moderate disruptions to Russian wheat exports began. These repeated disruptions contributed to political

instability during the period 2022-2024. Successive episodes of supply uncertainty, sanctions-related frictions and export volatility have amplified fiscal strain and distributive pressures in Russia-dependent African states.

Overall, these numerically extended models indicate that the 2 percent annual contraction in Russian wheat exports between 2014 and 2021 did not lead to food insecurity. At the same time, they point out that it did contribute to the political instability of countries that depend on Russian wheat in sub-Saharan Africa. While the humanitarian consequences of the Russian grain trap are severe, they only emerge when the extreme contraction of Russian wheat exports takes place in the 2022-2024 window. Democratic institutions remain largely unaffected during the same period. The trap, therefore, operates asymmetrically across outcomes and time horizons. Moderate and repeated Russian export disturbances increase the probability of political instability, while large-scale supply disruptions produce severe humanitarian consequences for the African states that have been mostly dependent on Russian wheat imports.

## 5 Conclusions

Building upon the historical weaponization of agricultural trade, this study provides a rigorous empirical evaluation of the "Russian grain trap"—the hypothesis that Moscow is utilizing its wheat exports to project geopolitical influence and export institutional fragility to the Global South. By examining the impact of exogenous, war-induced supply shocks through a Bartik-style instrumental variable framework, we are able to determine the causal impact of Russian grain exports on African food security, democratic governance, and political stability between 2014 and 2024. While dependence on Russian wheat undermines African food security and political development, this is not the case for dependence on Ukrainian wheat. This divergence confirms that the observed outcomes are not linked to a generalized Black Sea market volatility, but rather to a deliberate, state-backed Russian strategy of asymmetric interdependence.

Furthermore, by extending the study beyond 2022 and the Russian full-scale invasion of Ukraine, we find that moderate as well as persistent disruptions in Russian export markets (2014–2021) did not worsen African undernourishment. At the same time, they were significantly and negatively associated with African political stability. Following the shock of 2022, this geopolitical vulnerability became compounded by food insecurity as well. Additionally, democracy remained insulated from these trade-related shocks. Moreover, we find no evidence that other major vectors of geopolitical finance such as U.S. foreign aid or Chinese infrastructure investment systematically mitigated or amplified these destabilizing effects. This reveals Russian agricultural statecraft as an independent and standalone driver of institutional risk in sub-Saharan Africa.

Finally, the profound sensitivity of African food security and political development to Russian trade patterns exposes a critical strategic vulnerability that may be relevant for also other countries or regions in the Global South. Our empirical evidence shows that wheat dependence on Moscow is not purely a commercial exchange, but a vector for imported instability. To escape the long-term geopolitical trap of weaponized food systems, African policymakers and international development partners must urgently prioritize the structural diversification of staple agricultural suppliers.

## 6. References

- Joaquín Álvarez. The weaponization of hunger: An analysis of food security in conflict and post-conflict scenarios. *Journal of Human Security and Global Law*, 3:1–24, 2024. doi: 10.5565/rev/jhsgl.42.
- David H. Autor, David Dorn, and Gordon H. Hanson. The China syndrome: Local labor market effects of import competition in the United States. *American Economic Review*, 103(6):2121–2168, 2013.
- Timothy J. Bartik. *Who Benefits from State and Local Economic Development Policies?* W.E. Upjohn Institute for Employment Research, Kalamazoo, MI, 1991.
- Kirill Borusyak, Peter Hull, and Xavier Jaravel. Quasi-experimental shift-share research designs. *Review of Economic Studies*, 89(1):181–213, 2022. doi: 10.1093/restud/rdab030.
- P. J. Diven. The political economy of US food aid. *Political Research Quarterly*, 54(1):71–93, 2001.
- FAO, IFAD, UNICEF, WFP, and WHO. The state of food security and nutrition in the world 2024: Financing to end hunger, food insecurity and malnutrition in all its forms, 2024.
- Joseph Glauber and David Laborde. End of the Black Sea Grain Initiative: Implications for sub-Saharan Africa, 2023.
- Paul Goldsmith-Pinkham, Isaac Sorkin, and Henry Swift. Bartik instruments: What, when, why, and how. *American Economic Review*, 110(8):2586–2624, 2020. doi: 10.1257/aer.20181047.
- Elia Götz, Jonas Gejl Kaas, and Kevin Patrick. How African states voted on Russia’s war in Ukraine at the United Nations – and what it means for the West. Policy brief, Danish Institute for International Studies, November 2023.
- L. Götz and M. Svanidze. Russia’s grain exports and supply risks during Russia’s war in Ukraine. *Russian Analytical Digest*, (304):16–20, 2023.
- International Trade Centre (ITC). Trade map: Trade statistics for international business development. URL <https://www.trademap.org>. Retrieved 23 Sep. 2025.
- Pavlo Martyshev, Oleg Nivievskyi, and Mariia Bogonos. Regional war, global consequences: Mounting damages to Ukraine’s agriculture and growing challenges for global food security. In *The Russia-Ukraine conflict and global food security*, chapter 23, pages 120–124. International Food Policy Research Institute (IFPRI), 2023.
- K. Melkadze, L. Götz, M. Svanidze, and T. Jamali Jaghdani. Russlands weizenexport: Jüngste strukturelle veränderungen und auswirkungen. *Russland-Analysen*, (455):2–11, 2024. doi: 10.31205/RA.455.01.

- Ellen Messer and Marc Cohen. Food as a weapon. *Oxford Research Encyclopedia of Food Studies*, 2024. URL <https://oxfordre.com/foodstudies/view/10.1093/acrefore/9780197762530.001.0001/acrefore-9780197762530-e-17>. Retrieved 23 Sep. 2025.
- P. Musvanhiri. Do Russian grains feed Africa or fuel influence? Deutsche Welle, 2024. URL <https://www.dw.com/en/russian-grain-aid-feeding-africa-or-fueling-influence/a-68631960>.
- Michael Schmitt. Weaponizing food, March 2022. Lieber Institute West Point.
- F. Tramsen. The new food powers: how China and Russia are filling America's retreat, 2026. URL <https://warontherocks.com/2026/01/the-new-food-powers-how-china-and-russia-are-filling-americas-retreat/>. War on the Rocks.
- M. B. Wallerstein. *Food for war—food for peace: United States food aid in a global context*. MIT Press, Cambridge, MA, 1980.
- World Bank. Worldwide governance indicators (WGI), 2023. Washington, DC: World Bank.

## Print Appendix

**Table A.1:** African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation Total: Baseline

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-0.756 (1.157)	-12.030 (7.394)	-1.768*** (0.633)
<b>Total</b>	0.160 (0.111)	0.871 (0.645)	0.094 (0.064)
Year fixed effects	Yes	Yes	Yes
Observations	244	230	232
$R^2$ (centered)	-0.855	-0.844	-1.317
First-stage $F$ (excluded IVs, M)	4.780	4.250	4.270
KP rk $F$ -stat (Wald)	4.330	8.070	8.080

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models. “M” is the main endogenous regressor; “Total” is the aggregated import measure. Standard errors clustered at the country level in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.2:** African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV)

Baseline Model, Variation Total: With Lagged GDP per Capita

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	0.200 (0.868)	-9.554* (5.471)	-1.197** (0.482)
<b>Total share</b>	0.156 (0.112)	0.911 (0.638)	0.091 (0.059)
<b>Lagged GDP per capita</b>	0.000*** (0.000)	0.000 (0.000)	0.000*** (0.000)
Year fixed effects	Yes	Yes	Yes
Observations	207	196	196
$R^2$ (centered)	-0.835	-0.418	-0.721
First-stage $F$ (excluded IVs, M)	3.440	3.720	3.720
KP rk $F$ -stat (Wald)	4.510	8.120	8.120

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models. Specification includes lagged GDP per capita as an additional control. Standard errors clustered at the country level in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.3:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 3: US and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-2.892*	-0.983	-16.650***	3.603	-1.707***	0.881***
	(1.525)	(1.336)	(3.367)	(4.479)	(0.413)	(0.338)
Share UA / share RU	-0.161	0.311*	-4.236**	4.702***	-0.537***	0.601***
	(0.131)	(0.188)	(1.960)	(1.335)	(0.149)	(0.106)
US Foreign Aid	0.000	0.000	0.000***	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Chinese Foreign Aid	0.000	0.000	0.000	0.000	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-2.188	-1.186	-3.012	-3.767	-4.382	-9.858
First-stage $F$ (excluded IVs)	4.580	4.470	9.890	35.530	9.910	35.160
KP rk $F$ -stat	2.420	3.140	3.600	26.610	3.600	26.500

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.4:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 4: US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-2.998*	-1.105	-17.230***	3.602	-1.732***	0.884***
	(1.606)	(1.467)	(4.165)	(4.501)	(0.425)	(0.322)
Share UA / share RU	-0.146	0.299	-4.349**	4.705***	-0.542***	0.591***
	(0.127)	(0.193)	(2.022)	(1.276)	(0.148)	(0.112)
US Foreign Aid	0.000	0.000	0.000***	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-2.349	-1.192	-3.235	-3.773	-4.499	-9.570
First-stage $F$ (excluded IVs)	4.540	3.960	9.590	37.650	9.630	37.280
KP rk $F$ -stat	2.310	2.520	3.680	20.070	3.680	20.130

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.5:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 5: Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-2.858*	-2.365*	-18.250***	2.105	-1.932***	0.790***
	(1.520)	(1.259)	(3.302)	(3.222)	(0.462)	(0.227)
Share UA / share RU	-0.089	0.077	-9.218***	4.329***	-1.232***	0.578***
	(0.144)	(0.103)	(2.589)	(0.824)	(0.229)	(0.044)
Chinese Foreign Aid	-0.000	-0.000	-0.000*	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-2.016	-1.409	-9.779	-3.098	-18.475	-9.093
First-stage $F$ (excluded IVs)	5.050	11.870	11.470	128.650	11.520	128.690
KP rk $F$ -stat	3.380	12.050	6.620	44.970	6.660	44.960

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.6:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.115**	-1.965	-16.520***	2.763	-1.740***	0.482**
	(1.528)	(1.717)	(3.444)	(4.028)	(0.386)	(0.244)
Share UA / share RU	-0.122	0.188	-4.375**	4.538***	-0.501***	0.523***
	(0.191)	(0.218)	(1.902)	(1.231)	(0.153)	(0.081)
Lagged GDP per capita	0.000	0.000**	-0.000	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
US Foreign Aid	0.000	0.000***	0.000***	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Chinese Foreign Aid	-0.000	-0.000	-0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	213	213	215	215
$R^2$ (centered)	-2.411	-1.317	-3.098	-3.460	-4.036	-7.247
First-stage $F$ (excluded IVs)	4.380	3.950	9.040	28.340	9.060	28.050
KP rk $F$ -stat	2.410	2.990	3.560	26.200	3.560	26.100

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.7:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 7: Lagged GDP per Capita & US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.215** (1.618)	-2.081 (1.857)	-17.080*** (4.233)	2.764 (4.019)	-1.768*** (0.401)	0.482** (0.241)
Share UA / share RU	-0.115 (0.191)	0.180 (0.225)	-4.503** (1.970)	4.548*** (1.185)	-0.507*** (0.151)	0.516*** (0.087)
Lagged GDP per capita	0.000 (0.000)	0.000* (0.000)	-0.000 (0.001)	0.000 (0.000)	0.000*** (0.000)	0.000*** (0.000)
US Foreign Aid	0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	213	213	215	215
$R^2$ (centered)	-2.589	-1.422	-3.330	-3.479	-4.169	-7.054
First-stage $F$ (excluded IVs)	4.270	3.640	8.770	29.090	8.800	28.860
KP rk $F$ -stat	2.310	2.550	3.640	20.000	3.640	20.060

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.8:** African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation 8: Lagged GDP per Capita & Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.105** (1.566)	-2.644* (1.539)	-18.240*** (3.298)	1.376 (2.641)	-1.951*** (0.435)	0.372 (0.240)
Share UA / share RU	-0.108 (0.300)	0.068 (0.163)	-9.295*** (2.792)	4.183*** (0.700)	-1.099*** (0.274)	0.495*** (0.043)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.000)	0.000* (0.000)	0.000*** (0.000)
Chinese Foreign Aid	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	213	213	215	215
$R^2$ (centered)	-2.368	-1.700	-9.906	-2.856	-15.219	-6.457
First-stage $F$ (excluded IVs)	4.610	7.720	10.850	66.410	10.890	65.910
KP rk $F$ -stat	3.410	10.130	5.590	37.730	5.610	37.730

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.9:** African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation Total: Baseline

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	0.646 (4.787)	19.210*** (6.280)	2.989*** (0.859)
<b>Total share</b>	0.542 (0.698)	7.840*** (1.854)	1.017*** (0.232)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	239	213	215
$R^2$ (centered)	-3.945	-18.936	-44.773
First-stage $F$ (excluded IVs, $M_{lag}$ )	2.490	23.350	23.410
KP rk $F$ -stat (Wald)	0.100	9.200	9.210

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models. “ $M_{lag}$ ” is the lagged main endogenous regressor; “Total share” is the lagged aggregated import measure. Standard errors clustered at the country level in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.10:** African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV)  
Baseline Lagged Model, Variation Total: Lagged GDP per Capita

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-1.837 (2.246)	16.680*** (5.751)	2.124*** (0.754)
<b>Lagged GDP per capita</b>	0.000110*** (0.0000377)	0.000390 (0.000487)	0.000134*** (0.0000516)
<b>Total share</b>	0.196 (0.300)	7.344*** (1.532)	0.847*** (0.171)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	228	213	215
$R^2$ (centered)	-1.289	-16.257	-29.973
First-stage $F$ (excluded IVs, $M_{lag}$ )	2.190	12.820	12.810
KP rk $F$ -stat (Wald)	0.690	8.930	8.840

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

## Online Appendix

**Table A.11:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 1: Baseline

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-8.732 (9.426)	47.030 (155.100)	-0.005 (13.260)	-1.243 (6.527)	-9.031 (7.092)	-1.753* (0.968)
Share UA / share RU	0.618 (0.680)	29.840 (98.920)	-0.085 (0.615)	0.286 (2.037)	0.501 (0.561)	-1.676*** (0.290)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-21.902	-8000.000	0.093	0.112	-40.722	-55.698
First-stage $F$ (excluded IVs)	2.980	2.980	2.150	2.150	2.160	2.160
KP rk $F$ -stat	0.620	0.050	0.710	4.530	0.710	4.540

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.12:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 2: Lagged GDP per Capita

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.293 (2.767)	7.928 (6.170)	0.323 (5.802)	0.404 (4.186)	-3.401** (1.452)	-1.656** (0.702)
Share UA / share RU	0.407 (0.360)	4.850 (3.461)	0.012 (0.338)	-0.094 (2.631)	0.258 (0.212)	-2.013*** (0.507)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)	0.000*** (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-5.078	-250.000	0.133	0.116	-6.739	-120.000
First-stage $F$ (excluded IVs)	3.000	3.000	3.010	3.010	3.010	3.010
KP rk $F$ -stat	1.610	2.150	2.860	4.330	2.860	4.330

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

### 1 Baseline Models

**Table A.13:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 3: US and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-4.271 (3.189)	-167.800 (2158.100)	-1.561 (8.388)	-1.909 (6.019)	-3.790** (1.792)	-1.619 (1.230)
Share UA / share RU	0.455 (0.403)	-132.700 (1700.300)	-0.052 (0.471)	0.261 (2.307)	0.324 (0.289)	-1.631*** (0.356)
US foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)	0.000 (0.000)
Chinese foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-7.497	-160000.000	0.105	0.119	-9.028	-52.673
First-stage $F$ (excluded IVs)	4.840	4.840	3.630	3.630	3.660	3.660
KP rk $F$ -stat	1.350	0.000	1.580	5.720	1.610	5.750

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.14:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 4: US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-4.393 (3.403)	-3196.400 (766588.600)	-2.097 (8.958)	-2.210 (6.250)	-3.928** (1.932)	-1.663 (1.303)
Share UA / share RU	0.469 (0.438)	-2533.500 (607259.700)	-0.017 (0.490)	0.082 (2.429)	0.333 (0.307)	-1.657*** (0.352)
US foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-8.118	-57000000.000	0.088	0.094	-9.753	-54.419
First-stage $F$ (excluded IVs)	4.850	4.850	3.710	3.710	3.740	3.740
KP rk $F$ -stat	1.230	0.000	1.470	6.590	1.490	6.620

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.15:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 5: Chinese Foreign Investment

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-8.299 (8.369)	61.940 (283.500)	1.158 (12.070)	-0.839 (6.440)	-8.510 (6.241)	-1.691* (0.925)
Share UA / share RU	0.591 (0.609)	39.520 (180.200)	-0.139 (0.588)	0.483 (1.902)	0.476 (0.510)	-1.646*** (0.297)
Chinese foreign aid	-6.70e-10 (6.76e-10)	4.91e-09 (2.35e-08)	-9.64e-10 (9.35e-10)	-1.04e-09 (7.90e-10)	-4.31e-10 (5.87e-10)	-1.59e-10 (1.48e-10)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	244	244	230	230	232	232
$R^2$ (centered)	-19.624	-14000.000	0.088	0.119	-35.980	-53.666
First-stage $F$ (excluded IVs)	2.970	2.970	2.080	2.080	2.090	2.090
KP rk $F$ -stat	0.690	0.020	0.790	3.950	0.790	3.960

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.16:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.519 (2.169)	8.329 (8.011)	-0.671 (6.245)	-0.663 (5.668)	-2.641*** (0.998)	-2.083 (1.307)
Share UA / share RU	0.397 (0.318)	5.295 (4.015)	0.004 (0.324)	-0.031 (2.778)	0.236 (0.184)	-2.018*** (0.682)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)
US foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Chinese foreign aid	-0.000* (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-4.822	-290.000	0.163	0.158	-4.641	-120.000
First-stage $F$ (excluded IVs)	4.430	4.430	4.040	4.040	4.040	4.040
KP rk $F$ -stat	1.930	1.290	3.000	2.870	3.000	2.870

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.17:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 7: Lagged GDP per Capita and US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.351 (2.354)	7.596 (6.427)	-0.769 (6.645)	-0.692 (6.009)	-2.669** (1.114)	-2.091 (1.393)
Share UA / share RU	0.408 (0.353)	5.073 (3.445)	0.033 (0.349)	-0.279 (2.969)	0.244 (0.202)	-2.086*** (0.622)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)
US foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-5.143	-270.000	0.150	0.095	-5.095	-120.000
First-stage $F$ (excluded IVs)	4.430	4.430	4.060	4.060	4.060	4.060
KP rk $F$ -stat	1.480	1.890	2.360	3.760	2.360	3.762

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.18:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Variation 8: Lagged GDP per Capita and Chinese Development Investment

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M)	-3.215 (2.431)	8.525 (7.464)	0.848 (5.107)	0.698 (3.872)	-3.218** (1.263)	-1.578** (0.617)
Share UA / share RU	0.390 (0.323)	5.161 (4.192)	-0.023 (0.313)	0.178 (2.450)	0.246 (0.190)	-1.941*** (0.558)
Lagged GDP per capita	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)
Chinese Development Investment	-0.000** (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	207	207	196	196	196	196
$R^2$ (centered)	-4.502	-280.000	0.133	0.153	-5.824	-110.000
First-stage $F$ (excluded IVs)	3.010	3.010	2.980	2.980	2.980	2.980
KP rk $F$ -stat	1.960	1.330	3.340	3.350	3.340	3.350

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.19:** African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV)

Variation Total: Baseline

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-7.600 (7.826)	0.521 (16.680)	-12.130 (14.160)
<b>Total share</b>	0.606 (0.657)	-0.121 (0.887)	0.714 (1.145)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	244	230	232
$R^2$ (centered)	-22.586	0.0683	-92.034
First-stage $F$ (excluded IVs, M)	2.980	2.150	2.160
KP rk $F$ -stat (Wald)	0.700	0.300	0.300

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models.  $M$  and  $T$  are instrumented using the 2014 Crimea shock variables ( $z_{mix14}$ ,  $z_{tot14}$ ). Standard errors clustered at the country level in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.20:** African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV)

Variation Total: Lagged GDP per Capita

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-2.424 (2.013)	0.310 (6.080)	-3.657** (1.803)
<b>Lagged GDP per capita</b>	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)
<b>Total share</b>	0.376 (0.318)	0.014 (0.388)	0.296 (0.285)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	207	196	196
$R^2$ (centered)	-5.705	0.135	-11.766
First-stage $F$ (excluded IVs, M)	3.000	3.010	3.010
KP rk $F$ -stat (Wald)	1.740	1.260	1.260

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models including lagged GDP per capita.  $M$  and  $T$  are instrumented using the 2014 Crimea shock-based instruments ( $z_{mix14}$ ,  $z_{tot14}$ ). Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.21:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 1: Baseline

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.441 (7.081)	-3.679 (2.634)	2.545 (11.370)	1.077 (3.372)	-7.712 (4.937)	-0.671 (0.429)
Share UA / share RU (lagged)	-1.495 (1.617)	3.845 (5.048)	2.453 (16.760)	0.348 (2.309)	-12.230* (6.394)	-1.811*** (0.351)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-24.983	-150.000	-0.484	0.158	-1600.000	-88.682
First-stage $F$ (excluded IVs)	3.080	3.080	25.860	25.860	26.020	26.020
KP rk $F$ -stat	1.070	0.660	1.380	20.750	1.650	20.510

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.22:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 2: Lagged GDP per Capita

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.903 (7.049)	-2.405 (2.401)	2.693 (11.720)	0.794 (3.054)	-7.792 (5.098)	-0.828 (0.521)
Share UA / share RU (lagged)	-2.533 (2.684)	2.736 (2.274)	3.378 (18.610)	0.440 (2.319)	-12.860* (7.218)	-1.759*** (0.376)
Lagged GDP per capita	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	213	213	215	215
$R^2$ (centered)	-45.326	-78.148	-0.959	0.167	-1800.000	-83.542
First-stage $F$ (excluded IVs)	2.150	2.150	12.440	12.440	12.580	12.580
KP rk $F$ -stat	1.320	3.480	1.220	13.810	1.530	13.630

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.23:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 3: US & Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-6.877 (6.167)	6.479 (16.360)	2.131 (7.670)	2.107 (3.791)	-4.874* (2.667)	-0.896 (0.561)
Share UA / share RU (lagged)	-0.757 (0.725)	17.390 (24.550)	0.010 (2.938)	0.010 (2.926)	-1.638 (1.036)	-1.658*** (0.288)
US foreign aid	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)
Chinese foreign aid	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-14.880	-2900.000	0.088	0.091	-43.454	-74.081
First-stage $F$ (excluded IVs)	1.730	1.730	9.620	9.620	9.490	9.490
KP rk $F$ -stat	0.820	0.230	1.100	45.380	1.090	44.440

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.24:** African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 4: US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.155 (6.607)	10.090 (27.960)	1.816 (7.794)	1.964 (3.716)	-4.978* (2.794)	-0.946 (0.604)
Share UA / share RU (lagged)	-0.730 (0.698)	20.380 (37.710)	-0.060 (3.002)	-0.060 (3.016)	-1.661 (1.051)	-1.683*** (0.300)
US foreign aid	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-15.797	-4000.000	0.090	0.071	-45.019	-76.348
First-stage $F$ (excluded IVs)	1.490	1.490	9.600	9.600	9.460	9.460
KP rk $F$ -stat	0.770	0.120	1.080	42.270	1.080	41.190

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.25:** African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 5: Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.115 (6.551)	-3.711 (2.601)	3.012 (10.700)	1.096 (3.459)	-7.320* (4.214)	-0.664 (0.428)
Share UA / share RU (lagged)	-1.454 (1.574)	3.861 (5.095)	3.206 (15.470)	0.472 (2.175)	-11.580** (5.579)	-1.766*** (0.295)
Chinese foreign aid	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	213	213	215	215
$R^2$ (centered)	-22.984	-150.000	-0.877	0.169	-1400.000	-84.213
First-stage $F$ (excluded IVs)	3.420	2.650	11.360	24.020	11.620	24.250
KP rk $F$ -stat	1.140	0.700	1.650	29.260	1.910	28.960

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.26:** African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-6.845 (5.484)	2.056 (7.672)	-4.859* (2.670)	-0.159 (3.189)	1.812 (3.720)	-1.021* (0.537)
Share UA / share RU (lagged)	-0.751 (0.791)	4.250 (2.781)	0.104 (3.102)	0.100 (2.945)	-1.655 (1.064)	-1.619*** (0.269)
Lagged GDP per capita	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
US foreign aid	-0.000 (0.000)	0.000 (0.000)	-0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Chinese foreign aid	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	213	215	228	213	215
$R^2$ (centered)	-14.540	-180.000	0.088	0.118	-43.966	-70.547
First-stage $F$ (excluded IVs)	1.470	1.470	7.690	7.690	7.640	7.640
KP rk $F$ -stat	0.920	2.030	1.060	31.350	1.050	30.620

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.27:** African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 7: Lagged GDP per Capita and US Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.084 (5.852)	1.741 (7.762)	-4.960* (2.799)	0.065 (3.462)	1.687 (3.636)	-1.065* (0.569)
Share UA / share RU (lagged)	-0.740 (0.783)	4.293 (2.878)	0.023 (3.172)	0.022 (3.046)	-1.681 (1.078)	-1.647*** (0.289)
Lagged GDP per capita	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
US foreign aid	-0.000 (0.000)	0.000 (0.000)	-0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	213	215	228	213	215
$R^2$ (centered)	-15.405	-180.000	0.091	0.098	-45.597	-73.040
First-stage $F$ (excluded IVs)	1.310	1.310	7.580	7.580	7.540	7.540
KP rk $F$ -stat	0.870	1.580	1.050	28.340	1.040	27.570

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.28:** African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation 8: Lagged GDP per Capita and Chinese Foreign Aid

Variable	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
Relative share UA (M, lagged)	-7.558 (6.502)	3.170 (11.020)	-7.387* (4.345)	-2.411 (2.383)	0.795 (3.145)	-0.827 (0.520)
Share UA / share RU (lagged)	-2.414 (2.583)	2.746 (2.301)	4.224 (17.090)	0.573 (2.164)	-12.120* (6.391)	-1.710*** (0.309)
Lagged GDP per capita	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Chinese foreign aid	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	213	215	228	213	215
$R^2$ (centered)	-41.089	-78.694	-1.540	0.173	-1600.000	-78.868
First-stage $F$ (excluded IVs)	2.320	2.320	12.300	12.300	12.440	12.440
KP rk $F$ -stat	1.390	4.170	1.410	18.470	1.720	18.250

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Standard errors clustered at the country level shown in parentheses. All values rounded to three decimals. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.29:** African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV)

Lagged Model, Variation Total: Baseline

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-9.834 (10.740)	1.260 (3.813)	-1.579*** (0.452)
<b>Total share</b>	-2.446 (2.761)	0.305 (2.029)	-1.577*** (0.293)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	239	213	215
$R^2$ (centered)	-100.000	0.140	-92.158
First-stage $F$ (excluded IVs, M_lag)	3.080	25.860	26.020
KP rk $F$ -stat (Wald)	0.960	23.660	25.530

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models.  $M_{lag}$  and  $T_{lag}$  are the lagged main import share and lagged total imports, respectively. Instruments are the 2014 Crimea shock-based variables ( $z_{mix14}$ ,  $z_{tot14}$ ). Standard errors clustered at the country level in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.30:** African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV)  
Lagged Model, Variation Total: Lagged GDP per Capita

	Democracy	Undernourishment	Pol. stability
<b>Relative share UA (M)</b>	-76.550 (470.200)	1.013 (3.532)	-1.666*** (0.527)
<b>Lagged GDP per capita</b>	-0.002 (0.014)	0.000 (0.000)	0.000 (0.000)
<b>Total share</b>	-34.160 (212.100)	0.389 (2.061)	-1.548*** (0.309)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	228	213	215
$R^2$ (centered)	-17.000	0.146	-88.913
First-stage $F$ (excluded IVs, $M_{lag}$ )	2.150	12.440	12.580
KP rk $F$ -stat (Wald)	0.010	18.920	20.300

*Notes:* Table reports second-stage 2SLS estimates from fixed-effects IV models with country fixed effects and year dummies. Regressors  $M_{lag}$  and  $T_{lag}$  are instrumented with the 2014 Crimea shock-based variables ( $z_{mix14}$ ,  $z_{tot14}$ ). Standard errors clustered at the country level shown in parentheses. Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A.31:** First-Stage Diagnostics – Baseline Model, Variation 1 (see Table 1: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 1: Baseline)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
$F$ -stat (excluded IVs)	4.780	4.780	4.250	4.250	4.270	4.270
p-value	0.020	0.020	0.028	0.028	0.027	0.027
SW $F$ -stat	4.560	6.910	12.060	5.760	12.090	5.770
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
$F$ -stat (excluded IVs)	0.770	137.500	0.650	102.870	0.650	103.170
p-value	0.477	0.000	0.533	0.000	0.532	0.000
SW $F$ -stat	2.490	92.650	4.270	164.120	4.280	164.540
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.760	1.390	2.430	1.450	2.440	1.450
Kleibergen–Paap rk Wald $F$ statistic	1.810	19.440	5.170	34.380	5.220	34.110

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 1, original (2022-war) specification, variation 1 (baseline). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.32:** First-Stage Diagnostics – Baseline Model, Variation 2 (see Table 2: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 2: Lagged GDP per Capita)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	3.440	3.440	3.720	3.720	3.720	3.720
p-value	0.054	0.054	0.045	0.045	0.045	0.045
SW <i>F</i> -stat	5.370	5.530	13.020	5.530	13.020	5.530
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.860	191.710	0.710	124.610	0.710	124.610
p-value	0.440	0.000	0.506	0.000	0.506	0.000
SW <i>F</i> -stat	3.030	86.830	4.990	135.460	4.990	135.460
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.200	1.450	2.280	1.450	2.280	1.450
Kleibergen–Paap rk Wald <i>F</i> statistic	1.720	25.320	4.300	34.990	4.300	34.990

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 2, original (2022-war) specification, variation 2 (lagged GDP per capita as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.33:** First-Stage Diagnostics – Baseline Model, Variation 3 (see Table 3: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 3: US Foreign Aid and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	7.040	7.040	5.480	5.480	5.510	5.510
p-value	0.005	0.005	0.012	0.012	0.012	0.012
SW <i>F</i> -stat	7.630	9.140	15.040	6.530	15.180	6.570
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.760	136.600	0.660	111.000	0.660	111.300
p-value	0.478	0.000	0.529	0.000	0.528	0.000
SW <i>F</i> -stat	2.940	72.530	3.990	95.870	4.010	96.220
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.340	1.430	2.280	1.520	2.290	1.520
Kleibergen–Paap rk Wald <i>F</i> statistic	2.190	24.090	4.720	29.890	4.840	29.870

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 3, original (2022-war) specification, variation 3 (US and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.34:** First-Stage Diagnostics – Baseline Model, Variation 4 (see Table 4: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 4: US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	7.180	7.180	5.830	5.830	5.870	5.870
p-value	0.004	0.004	0.010	0.010	0.009	0.009
SW <i>F</i> -stat	7.150	9.230	14.930	6.740	15.080	6.780
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.760	134.870	0.640	99.820	0.640	100.050
p-value	0.480	0.000	0.538	0.000	0.537	0.000
SW <i>F</i> -stat	2.710	68.820	3.730	90.480	3.750	90.780
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.410	1.380	2.320	1.450	2.330	1.460
Kleibergen–Paap rk Wald <i>F</i> statistic	1.880	23.610	4.160	32.330	4.260	32.260

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 4, original (2022-war) specification, variation 4 (US foreign aid as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.35:** First-Stage Diagnostics – Baseline Model, Variation 5 (see Table 5: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 5: Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.620	4.620	3.900	3.900	3.910	3.910
p-value	0.022	0.022	0.036	0.036	0.035	0.035
SW <i>F</i> -stat	5.050	6.790	11.910	5.420	11.940	5.440
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.790	182.360	0.680	171.810	0.680	172.410
p-value	0.466	0.000	0.520	0.000	0.518	0.000
SW <i>F</i> -stat	2.810	105.230	4.710	177.950	4.720	178.690
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.680	1.430	2.410	1.510	2.420	1.510
Kleibergen–Paap rk Wald <i>F</i> statistic	2.060	19.800	5.400	32.410	5.440	32.240

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 5, original (2022-war) specification, variation 5 (Chinese foreign aid as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.36:** First-Stage Diagnostics – Baseline Model, Variation 6 (see Table 6: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 6: Lagged GDP per Capita & US Foreign Aid & Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.580	4.580	4.390	4.390	4.390	4.390
p-value	0.025	0.025	0.028	0.028	0.028	0.028
SW <i>F</i> -stat	7.810	6.020	15.850	5.260	15.850	5.260
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.900	139.180	0.740	108.690	0.740	108.690
p-value	0.424	0.000	0.490	0.000	0.490	0.000
SW <i>F</i> -stat	3.810	55.280	5.470	63.470	5.470	63.470
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.202	1.548	2.271	1.572	2.271	1.572
Kleibergen–Paap rk Wald <i>F</i> statistic	2.171	17.509	4.921	18.414	4.921	18.414

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 6, original (2022-war) specification, variation 6 (lagged GDP per capita, US and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.37:** First-Stage Diagnostics – Baseline Model, Variation 7 (see Table 7: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 7: Lagged GDP per Capita & US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.550	4.550	4.420	4.420	4.420	4.420
p-value	0.025	0.025	0.028	0.028	0.028	0.028
SW <i>F</i> -stat	7.130	6.220	15.010	5.470	15.010	5.470
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.860	145.540	0.700	107.340	0.700	107.340
p-value	0.440	0.000	0.509	0.000	0.509	0.000
SW <i>F</i> -stat	3.090	62.970	4.520	74.510	4.520	74.510
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.110	1.460	2.260	1.460	2.260	1.460
Kleibergen–Paap rk Wald <i>F</i> statistic	1.530	21.860	3.360	27.130	3.360	27.130

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 7, original (2022-war) specification, variation 7 (lagged GDP per capita and US foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.38:** First-Stage Diagnostics – Baseline Model, Variation 8 (see Table 8: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation 8: Lagged GDP per Capita & Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	3.460	3.460	3.680	3.680	3.680	3.680
p-value	0.054	0.054	0.046	0.046	0.046	0.046
SW <i>F</i> -stat	6.050	5.490	13.470	5.410	13.470	5.410
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.920	219.130	0.760	157.730	0.760	157.730
p-value	0.418	0.000	0.484	0.000	0.484	0.000
SW <i>F</i> -stat	3.690	77.590	5.910	114.580	5.910	114.580
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	2.160	1.540	2.220	1.560	2.220	1.560
Kleibergen–Paap rk Wald <i>F</i> statistic	2.250	20.260	5.560	23.630	5.560	23.631

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 8, original (2022-war) specification, variation 8 (lagged GDP per capita and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or share ua/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.39:** First-Stage Diagnostics – Baseline Model, Variation Total (Baseline) (see Table A.1: African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation Total: Baseline)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – M</b>			
<i>F</i> -stat (excluded IVs)	4.780	4.250	4.270
p-value	0.020	0.028	0.027
SW <i>F</i> -stat	8.940	15.840	15.890
<b>Panel B: Endogenous regressor – Total (T)</b>			
<i>F</i> -stat (excluded IVs)	0.810	0.700	0.700
p-value	0.457	0.509	0.507
SW <i>F</i> -stat	5.590	6.830	6.850
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	2.670	2.460	2.460
Kleibergen–Paap rk Wald <i>F</i> statistic	4.330	8.070	8.080

*Notes:* Table reports first-stage statistics from the FE-IV total baseline models in Table A1. Panel A refers to the endogenous regressor *M*; Panel B to the Total regressor *T*. “*F*-stat (excluded IVs)” is the first-stage *F*-statistic for the excluded instruments. “SW *F*-stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

**Table A.40:** First-Stage Diagnostics – Baseline Model, Variation Total (With Lagged GDP per Capita) (see Table A.2: African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV): Baseline Model, Variation Total: With Lagged GDP per Capita)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – M</b>			
<i>F</i> -stat (excluded IVs)	3.440	3.720	3.720
p-value	0.054	0.045	0.045
SW <i>F</i> -stat	8.690	15.350	15.350
<b>Panel B: Endogenous regressor – Total (T)</b>			
<i>F</i> -stat (excluded IVs)	0.870	0.710	0.710
p-value	0.437	0.506	0.506
SW <i>F</i> -stat	6.850	8.150	8.150
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	2.550	2.380	2.380
Kleibergen–Paap rk Wald <i>F</i> statistic	4.510	8.120	8.120

*Notes:* Table reports first-stage statistics from the FE-IV total models including lagged GDP per capita in Table A2. Panel A refers to the endogenous regressor *M*; Panel B to the Total regressor *T*. “*F*-stat (excluded IVs)” is the first-stage *F*-statistic for the excluded instruments. “SW *F*-stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

## 2 Baseline Lagged Models

**Table A.41:** First-Stage Diagnostics – Baseline Lagged Model, Variation 1 (see Table 9: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 1: Baseline)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.490	2.490	23.350	23.350	23.410	23.410
p-value	0.107	0.107	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	5.270	10.700	12.320	106.710	12.360	106.890
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	50.390	125.260	35.240	47.970	35.330	48.110
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	18.020	35.630	15.410	70.200	15.470	70.350
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.980	1.910	1.210	1.660	1.210	1.660
Kleibergen–Paap rk Wald <i>F</i> statistic	3.340	9.550	7.320	28.090	7.340	28.190

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 9, original lagged (2022-war) specification, variation 1 (baseline). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

## 3 Extended Models

**Table A.42:** First-Stage Diagnostics – Baseline Lagged Model, Variation 2 (see Table 10: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 2: Lagged GDP per Capita)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.190	2.190	12.820	12.820	12.810	12.810
p-value	0.137	0.137	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.660	7.410	11.370	58.270	11.410	57.990
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	41.790	81.020	31.400	57.640	31.250	57.770
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	10.440	41.060	12.850	51.260	12.870	51.380
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.020	1.970	1.180	1.610	1.180	1.620
Kleibergen–Paap rk Wald <i>F</i> statistic	3.430	8.790	6.130	25.050	6.140	25.130

*Notes:* Table reports first-stage statistics from the FE-IV models in Table 10, original lagged (2022-war) specification, variation 2 (lagged GDP per capita as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.43:** First-Stage Diagnostics – Baseline Lagged Model, Variation 3 (see Table A.3: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 3: US and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.270	2.270	17.870	17.870	17.670	17.670
p-value	0.128	0.128	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.580	4.470	9.890	35.530	9.910	35.160
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	12.980	75.290	10.140	41.960	9.970	42.040
p-value	0.000	0.000	0.001	0.000	0.001	0.000
SW <i>F</i> -stat	10.510	9.970	7.600	55.010	7.600	54.900
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.830	1.740	1.010	2.110	1.010	2.120
Kleibergen–Paap rk Wald <i>F</i> statistic	2.420	3.140	3.600	26.610	3.600	26.500

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A3, original lagged (2022-war) specification, variation 3 (US and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.44:** First-Stage Diagnostics – Baseline Lagged Model, Variation 4 (see Table A.4: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 4: US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.030	2.030	16.560	16.560	16.360	16.360
p-value	0.156	0.156	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.540	3.960	9.590	37.650	9.630	37.280
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	12.850	64.780	10.050	35.580	9.880	35.650
p-value	0.000	0.000	0.001	0.000	0.001	0.000
SW <i>F</i> -stat	11.360	8.220	7.680	45.480	7.670	45.670
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.840	1.480	1.020	1.940	1.020	1.950
Kleibergen–Paap rk Wald <i>F</i> statistic	2.310	2.520	3.680	20.070	3.680	20.130

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A4, original lagged (2022-war) specification, variation 4 (US foreign aid as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.45:** First-Stage Diagnostics – Baseline Lagged Model, Variation 5 (see Table A.5: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 5: Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.890	2.890	25.000	25.000	25.030	25.030
p-value	0.078	0.078	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	5.050	11.870	11.470	128.650	11.520	128.690
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	50.010	116.340	34.830	55.240	35.040	55.410
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	17.180	41.970	13.890	100.000	13.990	99.950
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.970	2.050	1.180	1.810	1.180	1.810
Kleibergen–Paap rk Wald <i>F</i> statistic	3.380	12.050	6.620	44.970	6.660	44.960

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A5, original lagged (2022-war) specification, variation 5 (Chinese foreign aid as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.46:** First-Stage Diagnostics – Baseline Lagged Model, Variation 6 (see Table A.6: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.210	2.210	13.780	13.780	13.660	13.660
p-value	0.134	0.134	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.380	3.950	9.040	28.340	9.060	28.050
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	14.410	78.360	13.110	50.200	12.860	50.290
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	10.180	10.700	7.440	54.390	7.440	54.250
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.830	1.580	1.000	2.040	1.000	2.050
Kleibergen–Paap rk Wald <i>F</i> statistic	2.410	2.990	3.560	26.200	3.560	26.100

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A6, original lagged (2022-war) specification, variation 6 (lagged GDP per capita, US and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.47:** First-Stage Diagnostics – Baseline Lagged Model, Variation 7 (see Table A.7: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 7: Lagged GDP per Capita & US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.010	2.010	12.420	12.420	12.330	12.330
p-value	0.159	0.159	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.270	3.640	8.770	29.090	8.800	28.860
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	14.200	71.120	12.920	43.160	12.680	43.230
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	10.700	9.320	7.540	41.390	7.530	41.530
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.830	1.410	1.010	1.880	1.010	1.890
Kleibergen–Paap rk Wald <i>F</i> statistic	2.310	2.550	3.640	20.000	3.640	20.060

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A7, original lagged (2022-war) specification, variation 7 (lagged GDP per capita and US foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.48:** First-Stage Diagnostics – Baseline Lagged Model, Variation 8 (see Table A.8: African Development & Ukrainian vs. Russian Wheat Imports – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation 8: Lagged GDP per Capita & Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.440	2.440	14.640	14.640	14.620	14.620
p-value	0.111	0.111	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	4.610	7.720	10.850	66.410	10.890	65.910
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	41.470	85.270	30.940	64.340	30.890	64.500
p-value	0.000	0.000	0.000	0.000	0.000	0.000
SW <i>F</i> -stat	10.210	45.420	11.820	73.520	11.860	73.490
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.020	2.080	1.150	1.760	1.150	1.760
Kleibergen–Paap rk Wald <i>F</i> statistic	3.410	10.130	5.590	37.730	5.610	37.730

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A8, original lagged (2022-war) specification, variation 8 (lagged GDP per capita and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.49:** First-Stage Diagnostics – Baseline Lagged Model, Variation T1 (see Table A.9: African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation Total: Baseline)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – <math>M_{lag}</math></b>			
<i>F</i> -stat (excluded IVs)	2.49	23.35	23.41
p-value	0.107	0.000	0.000
SW <i>F</i> -stat	0.20	18.19	18.21
<b>Panel B: Endogenous regressor – <math>T_{lag}</math></b>			
<i>F</i> -stat (excluded IVs)	164.03	162.13	162.56
p-value	0.000	0.000	0.000
SW <i>F</i> -stat	0.20	18.91	18.93
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	0.24	1.75	1.75
Kleibergen–Paap rk Wald <i>F</i> statistic	0.10	9.20	9.21

*Notes:* Table reports first-stage statistics from the FE-IV total baseline models in Table A9. Panel A refers to the endogenous regressor  $M_{lag}$ ; Panel B to the lagged total regressor  $T_{lag}$ . “*F*-stat (excluded IVs)” is the first-stage *F*-statistic for the excluded instruments. “SW *F*-stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

**Table A.50:** First-Stage Diagnostics – Baseline Lagged Model, Variation T2 (see Table A.10: African Development & Relative Ukrainian Import Shares (Wheat) – 2022 Shock-Based Instruments (FE-IV): Baseline Lagged Model, Variation Total: Lagged GDP per Capita)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – <math>M_{lag}</math></b>			
$F$ -stat (excluded IVs)	2.19	12.82	12.81
p-value	0.137	0.000	0.000
SW $F$ -stat	1.34	15.67	15.52
<b>Panel B: Endogenous regressor – <math>T_{lag}</math></b>			
$F$ -stat (excluded IVs)	152.37	139.85	140.29
p-value	0.000	0.000	0.000
SW $F$ -stat	1.56	18.80	18.65
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	1.01	1.68	1.68
Kleibergen–Paap rk Wald $F$ statistic	0.69	8.93	8.84

*Notes:* Table reports first-stage statistics from the FE-IV total models including lagged GDP per capita in Table A10. Panel A refers to the endogenous regressor  $M_{lag}$ ; Panel B to the lagged total regressor  $T_{lag}$ . “ $F$ -stat (excluded IVs)” is the first-stage  $F$ -statistic for the excluded instruments. “SW  $F$ -stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

**Table A.51:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 1 (see Table A.11: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 1: Baseline)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
$F$ -stat (excluded IVs)	2.980	2.980	2.150	2.150	2.160	2.160
p-value	0.072	0.072	0.141	0.141	0.139	0.139
SW $F$ -stat	1.320	0.100	1.650	6.390	1.650	6.400
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
$F$ -stat (excluded IVs)	0.880	5.320	0.740	95.560	0.740	95.780
p-value	0.431	0.013	0.488	0.000	0.487	0.000
SW $F$ -stat	1.170	0.110	1.510	17.190	1.510	17.210
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.350	0.110	0.950	1.080	0.950	1.080
Kleibergen–Paap rk Wald $F$ statistic	0.620	0.050	0.710	4.530	0.710	4.540

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.11, extended (Crimea 2014) (Baseline). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.52:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 2 (see Table A.12: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 2: Lagged GDP per Capita)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	3.000	3.000	3.010	3.010	3.010	3.010
p-value	0.075	0.075	0.075	0.075	0.075	0.075
SW <i>F</i> -stat	4.300	2.110	8.030	10.450	8.030	10.450
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	1.010	33.990	0.820	39.880	0.820	39.880
p-value	0.385	0.000	0.455	0.000	0.455	0.000
SW <i>F</i> -stat	3.120	6.300	5.660	24.960	5.660	24.960
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.870	1.590	1.760	0.870	1.760	0.870
Kleibergen–Paap rk Wald <i>F</i> statistic	1.610	2.150	2.860	4.330	2.860	4.330

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.12, Crimea 2014 specification, variation 2 (baseline + lagged GDP per capita as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.53:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 3 (see Table A.13: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 3: US and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.840	4.840	3.630	3.630	3.660	3.660
p-value	0.019	0.019	0.044	0.044	0.042	0.042
SW <i>F</i> -stat	3.370	0.010	4.340	8.810	4.400	8.900
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.910	3.570	0.770	56.310	0.770	56.470
p-value	0.418	0.046	0.476	0.000	0.474	0.000
SW <i>F</i> -stat	2.370	0.010	3.150	17.910	3.180	18.030
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.700	0.010	1.430	1.050	1.440	1.050
Kleibergen–Paap rk Wald <i>F</i> statistic	1.350	0.000	1.580	5.720	1.610	5.750

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.13, Crimea 2014 specification, variation 3 (US foreign aid and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.54:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 4 (see Table A.14: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 4: US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.850	4.850	3.710	3.710	3.740	3.740
p-value	0.019	0.019	0.042	0.042	0.040	0.040
SW <i>F</i> -stat	3.270	0.000	4.210	9.120	4.260	9.210
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.910	5.080	0.750	77.150	0.750	77.390
p-value	0.417	0.016	0.485	0.000	0.483	0.000
SW <i>F</i> -stat	2.260	0.000	3.000	18.350	3.040	18.460
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.770	0.000	1.460	1.120	1.470	1.120
Kleibergen–Paap rk Wald <i>F</i> statistic	1.230	0.000	1.470	6.590	1.490	6.620

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.14, Crimea 2014 specification, variation 4 (US foreign aid in USD only as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.55:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 5 (see Table A.15: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 5: Chinese Foreign Investment)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	2.970	2.970	2.080	2.080	2.090	2.090
p-value	0.073	0.073	0.149	0.149	0.147	0.147
SW <i>F</i> -stat	1.460	0.060	1.820	5.870	1.810	5.880
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	0.910	3.510	0.780	59.670	0.780	59.790
p-value	0.420	0.049	0.473	0.000	0.472	0.000
SW <i>F</i> -stat	1.310	0.060	1.690	15.160	1.690	15.180
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.360	0.060	0.990	1.020	0.980	1.020
Kleibergen–Paap rk Wald <i>F</i> statistic	0.690	0.020	0.790	3.950	0.790	3.960

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.15, Crimea 2014 specification, variation 5 (Chinese foreign investment as control). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.56:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 6 (see Table A.16: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.430	4.430	4.040	4.040	4.040	4.040
p-value	0.027	0.027	0.036	0.036	0.036	0.036
SW <i>F</i> -stat	6.210	1.690	10.310	8.020	10.310	8.020
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	1.100	13.620	0.880	25.830	0.880	25.830
p-value	0.355	0.000	0.431	0.000	0.431	0.000
SW <i>F</i> -stat	3.890	2.910	6.110	11.160	6.110	11.160
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.900	1.380	1.800	0.820	1.800	0.820
Kleibergen–Paap rk Wald <i>F</i> statistic	1.930	1.290	3.000	2.870	3.000	2.870

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.16, Crimea 2014 specification, variation 6 (lagged GDP per capita, US and Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.57:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 7 (see Table A.17: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 7: Lagged GDP per Capita and US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	4.430	4.430	4.060	4.060	4.060	4.060
p-value	0.027	0.027	0.035	0.035	0.035	0.035
SW <i>F</i> -stat	5.810	2.220	9.870	11.990	9.870	11.990
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	1.060	14.090	0.840	37.330	0.840	37.330
p-value	0.369	0.000	0.448	0.000	0.448	0.000
SW <i>F</i> -stat	5.810	2.220	9.870	11.990	9.870	11.990
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.880	1.300	1.810	0.910	1.810	0.910
Kleibergen–Paap rk Wald <i>F</i> statistic	1.480	1.890	2.360	3.760	2.360	3.762

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.17, Crimea 2014 specification, variation 7 (lagged GDP per capita and US foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.58:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation 8 (see Table A.18: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Variation 8: Lagged GDP per Capita and Chinese Development Investment)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M)</b>						
<i>F</i> -stat (excluded IVs)	3.010	3.010	2.980	2.980	2.980	2.980
p-value	0.075	0.075	0.076	0.076	0.076	0.076
SW <i>F</i> -stat	4.750	1.570	8.350	9.730	8.350	9.730
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
<i>F</i> -stat (excluded IVs)	1.070	24.180	0.880	23.250	0.880	23.250
p-value	0.363	0.000	0.434	0.000	0.434	0.000
SW <i>F</i> -stat	3.660	4.740	6.490	22.700	6.490	22.700
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	1.810	1.730	1.720	0.810	1.720	0.810
Kleibergen–Paap rk Wald <i>F</i> statistic	1.960	1.330	3.340	3.350	3.340	3.350

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.18, Crimea 2014 specification, variation 8 (lagged GDP per capita and Chinese development investment as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor. “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification.

**Table A.59:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation T1 (see Table A.19: African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV): Variation Total: Baseline)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – <i>M</i></b>			
<i>F</i> -stat (excluded IVs)	2.980	2.150	2.160
p-value	0.073	0.141	0.139
SW <i>F</i> -stat	1.590	0.940	0.930
<b>Panel B: Endogenous regressor – <i>T</i></b>			
<i>F</i> -stat (excluded IVs)	0.730	0.710	0.710
p-value	0.494	0.503	0.502
SW <i>F</i> -stat	1.390	0.840	0.840
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	1.460	0.550	0.550
Kleibergen–Paap rk Wald <i>F</i> statistic	0.700	0.300	0.300

*Notes:* Table reports first-stage statistics from the Crimea non-lagged FE-IV total baseline models in Table A.19. Panel A refers to the endogenous regressor *M*; Panel B to the Total regressor *T*. “*F*-stat (excluded IVs)” is the first-stage *F*-statistic for the excluded instruments. “SW *F*-stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

**Table A.60:** First-Stage Diagnostics – 2014 Crimea Instruments, Variation T2 (With Lagged GDP per Capita) (see Table A.20: African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV): Variation Total: Lagged GDP per Capita)

	Democracy	Undernourishment	Pol. stability
<b>Panel A: Endogenous regressor – <math>M</math></b>			
$F$ -stat (excluded IVs)	3.000	3.010	3.010
p-value	0.075	0.075	0.075
SW $F$ -stat	5.370	6.990	6.990
<b>Panel B: Endogenous regressor – <math>T</math></b>			
$F$ -stat (excluded IVs)	0.800	0.760	0.760
p-value	0.464	0.482	0.482
SW $F$ -stat	4.020	4.610	4.610
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	1.830	1.350	1.350
Kleibergen–Paap rk Wald $F$ statistic	1.740	1.260	1.260

*Notes:* Table reports first-stage statistics from the Crimea non-lagged FE-IV total models including lagged GDP per capita in Table A.20. Panel A refers to the endogenous regressor  $M$ ; Panel B to the Total regressor  $T$ . “ $F$ -stat (excluded IVs)” is the first-stage  $F$ -statistic for the excluded instruments. “SW  $F$ -stat” is the Sanderson–Windmeijer statistic. “Kleibergen–Paap” tests address under- and weak-identification.

## 4 Extended Lagged Models

**Table A.61:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 1 (see Table A.21: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 1: Baseline)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (<math>M</math>, lagged)</b>						
$F$ -stat (excluded IVs)	3.080	3.080	25.860	25.860	26.020	26.020
p-value	0.067	0.067	0.000	0.000	0.000	0.000
SW $F$ -stat	1.690	8.360	2.610	51.440	2.990	51.560
<b>Panel B: Endogenous regressor – Share UA / share RU (lagged)</b>						
$F$ -stat (excluded IVs)	40.470	2.860	11.660	30.720	11.910	30.340
p-value	0.000	0.080	0.000	0.000	0.000	0.000
SW $F$ -stat	4.460	5.780	3.010	97.710	3.500	96.570
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.640	0.480	1.110	2.170	1.090	2.180
Kleibergen–Paap rk Wald $F$ statistic	1.070	0.660	1.380	20.750	1.650	20.510

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.21, lagged Crimea 2014 (Baseline, lagged wheat exposure). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (lagged Relative share UA or lagged Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.62:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 2 (see Table A.22: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 2: Lagged GDP per Capita)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M, lagged)</b>						
<i>F</i> -stat (excluded IVs)	2.150	2.150	12.440	12.440	12.580	12.580
p-value	0.141	0.141	0.0003	0.0003	0.0002	0.0002
SW <i>F</i> -stat	1.810	16.160	2.260	25.410	2.760	25.670
<b>Panel B: Endogenous regressor – Share UA / share RU (lagged)</b>						
<i>F</i> -stat (excluded IVs)	52.660	17.460	8.650	37.690	8.550	37.370
p-value	0.000	0.000	0.002	0.000	0.002	0.000
SW <i>F</i> -stat	3.610	12.760	2.510	98.160	3.120	97.130
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.690	0.920	1.070	2.290	1.070	2.310
Kleibergen–Paap rk Wald <i>F</i> statistic	1.320	3.480	1.220	13.810	1.530	13.630

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.22, lagged Crimea 2014 specification, variation 2 (baseline + lagged GDP per capita). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (lagged Relative share UA or lagged Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.63:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 3 (see Table A.23: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 3: US & Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (M, lagged)</b>						
<i>F</i> -stat (excluded IVs)	1.730	1.730	9.620	9.620	9.490	9.490
p-value	0.202	0.202	0.001	0.001	0.001	0.001
SW <i>F</i> -stat	1.530	0.450	2.570	18.630	2.580	18.440
<b>Panel B: Endogenous regressor – Share UA / share RU (lagged)</b>						
<i>F</i> -stat (excluded IVs)	7.840	3.920	3.890	43.250	3.880	42.880
p-value	0.003	0.036	0.037	0.000	0.036	0.000
SW <i>F</i> -stat	3.050	0.570	2.490	106.010	2.480	104.130
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.530	0.370	0.610	2.010	0.610	2.030
Kleibergen–Paap rk Wald <i>F</i> statistic	0.820	0.230	1.100	45.380	1.090	44.440

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.23, lagged Crimea 2014 specification, variation 3 (US & Chinese foreign aid as controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “*F*-stat (excluded IVs)” are the first-stage *F*-statistics for the excluded instruments in the equation for the indicated endogenous regressor (lagged Relative share UA or lagged Share UA/share RU). “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity.

**Table A.64:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 4 (see Table A.24: African Development Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 4: US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – <math>M_{lag}</math></b>						
$F$ -stat (excluded IVs)	1.490	1.490	9.600	9.600	9.460	9.460
p-value	0.249	0.249	0.001	0.001	0.001	0.001
SW $F$ -stat	1.500	0.240	2.460	18.060	2.480	17.900
<b>Panel B: Endogenous regressor – <math>ShareUA_{lag} / ShareRU_{lag}</math></b>						
$F$ -stat (excluded IVs)	7.780	4.240	3.860	42.570	3.850	41.870
p-value	0.003	0.029	0.037	0.000	0.037	0.000
SW $F$ -stat	3.220	0.260	2.430	127.450	2.420	123.650
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.520	0.220	0.610	2.100	0.610	2.120
Kleibergen–Paap rk Wald $F$ statistic	0.770	0.120	1.080	42.270	1.080	41.190

*Notes:* First-stage diagnostics from the FE-IV models in Table A.24, lagged Crimea 2014 specification, variation 4 (US foreign aid as control). All values are taken from `xtivreg2` first-stage output (or exact functions thereof) and rounded to three decimals. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.65:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 5 (see Table A.25: African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 5: Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (<math>M</math>)</b>						
$F$ -stat (excluded IVs)	3.420	3.420	24.020	24.020	24.250	24.250
p-value	0.052	0.052	0.000	0.000	0.000	0.000
SW $F$ -stat	1.700	7.670	2.970	47.860	3.350	48.170
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
$F$ -stat (excluded IVs)	40.250	2.650	11.360	32.770	11.620	32.560
p-value	0.000	0.094	0.001	0.000	0.000	0.000
SW $F$ -stat	4.490	5.380	3.410	92.810	3.900	92.170
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.640	0.500	1.100	2.020	1.080	2.030
Kleibergen–Paap rk Wald $F$ statistic	1.140	0.700	1.650	29.260	1.910	28.960

*Notes:* First-stage diagnostics from the FE-IV models in Table A.25, lagged Crimea 2014 specification, variation 5 (Chinese foreign aid as control). All values are taken from `xtivreg2` first-stage output (or exact functions thereof) and rounded to three decimals. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.66:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 6 (see Table A.26: African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 6: Lagged GDP per Capita, US and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (<math>M</math>)</b>						
$F$ -stat (excluded IVs)	1.470	1.470	7.690	7.690	7.640	7.640
p-value	0.252	0.252	0.003	0.003	0.003	0.003
SW $F$ -stat	1.640	2.880	2.350	15.220	2.360	15.160
<b>Panel B: Endogenous regressor – Share UA<sub>lag</sub> / share RU<sub>lag</sub></b>						
$F$ -stat (excluded IVs)	7.040	16.510	4.830	39.420	4.820	39.250
p-value	0.005	0.000	0.019	0.000	0.018	0.000
SW $F$ -stat	3.130	4.240	2.310	88.180	2.290	86.730
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.550	1.420	0.600	2.080	0.590	2.100
Kleibergen–Paap rk Wald $F$ statistic	0.920	2.030	1.060	31.350	1.050	30.620

*Notes:* First-stage diagnostics from the FE-IV models in Table A.26, lagged Crimea 2014 specification, variation 6 (lagged GDP per capita, US & Chinese foreign aid as controls). All values are taken from `xtivreg2` first-stage output (or exact functions thereof) and rounded to three decimals. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.67:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 7 (see Table A.27: African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 7: Lagged GDP per Capita and US Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (<math>M</math>)</b>						
$F$ -stat (excluded IVs)	1.310	1.310	7.580	7.580	7.540	7.540
p-value	0.290	0.290	0.003	0.003	0.003	0.003
SW $F$ -stat	1.580	2.420	2.250	14.730	2.270	14.700
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
$F$ -stat (excluded IVs)	6.950	17.820	4.770	45.540	4.760	45.010
p-value	0.005	0.000	0.020	0.000	0.019	0.000
SW $F$ -stat	3.220	3.210	2.250	122.020	2.240	118.630
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.550	1.220	0.600	2.170	0.590	2.200
Kleibergen–Paap rk Wald $F$ statistic	0.870	1.580	1.050	28.340	1.040	27.570

*Notes:* Table reports first-stage statistics from the FE-IV models in Table A.27, lagged Crimea 2014 specification, variation 7 (lagged GDP per capita and US aid controls). All values are taken directly from `xtivreg2` first-stage output and rounded to three decimal places. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.68:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation 8 (see Table A.28: African Development & Ukrainian vs. Russian Wheat Imports–2014 Crimea Instruments (FE-IV): Lagged Model, Variation 8: Lagged GDP per Capita and Chinese Foreign Aid)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – Relative share UA (<math>M</math>)</b>						
$F$ -stat (excluded IVs)	2.320	2.320	12.300	12.300	12.440	12.440
p-value	0.123	0.123	0.000	0.000	0.000	0.000
SW $F$ -stat	1.840	19.170	2.590	24.960	3.070	25.240
<b>Panel B: Endogenous regressor – Share UA / share RU</b>						
$F$ -stat (excluded IVs)	51.560	14.800	8.270	33.280	8.130	33.160
p-value	0.000	0.000	0.002	0.000	0.002	0.000
SW $F$ -stat	3.690	20.280	2.840	79.200	3.450	78.760
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.700	0.990	1.060	2.140	1.050	2.160
Kleibergen–Paap rk Wald $F$ statistic	1.390	4.170	1.410	18.470	1.720	18.250

*Notes:* First-stage diagnostics from the FE-IV models in Table A.28, lagged Crimea 2014 specification, variation 8 (lagged GDP per capita and Chinese foreign aid as controls). All values are taken from `xtivreg2` first-stage output (or exact functions thereof) and rounded to three decimals. The rows labeled “ $F$ -stat (excluded IVs)” are the first-stage  $F$ -statistics for the excluded instruments in the equation for the indicated endogenous regressor (Relative share UA or Share UA/share RU). “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity.

**Table A.69:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation Total (Baseline) (see Table A.29: African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV): Lagged Model, Variation Total: Baseline)

	Democracy		Undernourishment		Political stability	
	UA	RU	UA	RU	UA	RU
<b>Panel A: Endogenous regressor – <math>M_{lag}</math></b>						
$F$ -stat (excluded IVs)	3.080		25.860		26.020	
p-value	0.067		0.000		0.000	
SW $F$ -stat	1.600		13.570		13.730	
<b>Panel B: Endogenous regressor – <math>T_{lag}</math></b>						
$F$ -stat (excluded IVs)	12.240		11.990		12.550	
p-value	0.000		0.000		0.000	
SW $F$ -stat	2.190		58.330		66.000	
<b>Panel C: Joint identification tests</b>						
Kleibergen–Paap rk LM statistic	0.970		2.000		1.970	
Kleibergen–Paap rk Wald $F$ statistic	0.960		23.660		25.530	

*Notes:* Table reports first-stage statistics from the Crimea FE-IV total baseline models in Table A.29. Panel A refers to the endogenous regressor  $M_{lag}$ ; Panel B to the lagged total regressor  $T_{lag}$ . “ $F$ -stat (excluded IVs)” is the first-stage  $F$ -statistic for the excluded instruments. “SW  $F$ -stat” denotes the Sanderson–Windmeijer first-stage  $F$ -statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald  $F$  statistic” tests weak identification under heteroskedasticity. All values are taken from `xtivreg2` first-stage output and rounded to three decimals.

**Table A.70:** First-Stage Diagnostics – Lagged Crimea 2014 Instruments, Variation Total (With Lagged GDP per Capita) (see Table A.30: African Development & Relative Ukrainian Import Shares (Wheat)–2014 Crimea Instruments (FE-IV): Lagged Model, Variation Total: Lagged GDP per Capita)

	Democracy	Undernourishment	Political stability
<b>Panel A: Endogenous regressor – <math>M_{lag}</math></b>			
<i>F</i> -stat (excluded IVs)	2.150	12.440	12.580
p-value	0.141	0.000	0.000
SW <i>F</i> -stat	0.030	11.930	11.840
<b>Panel B: Endogenous regressor – <math>T_{lag}</math></b>			
<i>F</i> -stat (excluded IVs)	17.000	10.340	11.160
p-value	0.000	0.001	0.001
SW <i>F</i> -stat	0.030	55.770	62.710
<b>Panel C: Joint identification tests</b>			
Kleibergen–Paap rk LM statistic	0.030	2.120	2.090
Kleibergen–Paap rk Wald <i>F</i> statistic	0.010	18.920	20.300

*Notes:* Table reports first-stage statistics from the Crimea FE-IV total models including lagged GDP per capita in Table A.30. Panel A refers to the endogenous regressor  $M_{lag}$ ; Panel B to the lagged total regressor  $T_{lag}$ . “*F*-stat (excluded IVs)” is the first-stage *F*-statistic for the excluded instruments. “SW *F*-stat” denotes the Sanderson–Windmeijer first-stage *F*-statistic. “Kleibergen–Paap rk LM statistic” tests underidentification, and “Kleibergen–Paap rk Wald *F* statistic” tests weak identification under heteroskedasticity. All values are taken from `xtivreg2` first-stage output and rounded to three decimals.

**Diskussionsbeiträge - Fachbereich Wirtschaftswissenschaft - Freie Universität Berlin**  
**Discussion Paper - School of Business & Economics - Freie Universität Berlin**

2026 erschienen:

- 2026/1      Hundsdorfer, Jochen; Löwe, Maren: How Do Value Added Taxes Affect Wages and Labor?  
*FACTS*
- 2026/2      Gril, Lorena; Rendtel, Ulrich: Mapping High-Income Taxpayers in Berlin Using Kernel-Smoothed Proportions from Aggregated Georeferenced Data  
*Economics*
- 2026/3      Gril, Lorena; Hossain, Md Jamal; Tzavidis, Nikos; Rendtel, Ulrich: Kernel density estimation under masking of geolocations with applications to DHS data  
*Economics*
- 2026/4      Corneo, Giacomo: Narratives as Separating Equilibria: on the Origins of the Ukraine War  
*Economics*
- 2026/5      Tauscher, Fabian; Kari, Arthur; Gersch, Martin: From Regulation to Realisation: Secure Processing Environment for the European Health Data Space  
*Information Systems*
- 2026/6      Prummer, Anja; Nava, Francesco: Divisive By Design: Shaping Values in Optimal Mechanisms. – 2., überarb. Aufl.  
*Economics*
- 2026/7      Hauck, Florian; Güth, Albrecht; Kliewer, Natalia; Rößler-von Saß, David: Applying Generative Adversarial Networks to Generate Synthetic Train Trip Data for Train Delay Prediction  
*Information Systems*
- 2026/8      Corneo, Giacomo: Zeitenwende und öffentliche Finanzen  
*Economics*
- 2026/9      Hu, Yue Louise: Credits that Count: High School Vocational Education from Sibling Comparisons  
*Economics*
- 2026/10     Bertini, Raffaele; Grigoriadis, Theocharis: Climate Adaption, Water Governance & Conflict  
*Economics*