

Remaining pairs of kernel regressions

Part I: Transitions: Four pairs of: (E, y) , (S, y) , (T, y) , and (V, y)

Part II: Three extra pairs of: (T, E) , (T, V) , and (V, E)

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The purpose of this background note is to document claims in Paldam and Saadaoui (2026). The paper uses Kernel regressions. They are bulky to report, so only the most necessary graphs are included in the paper. This background paper reports the omitted kernel regressions:

Part I expands section 4 in the paper by presenting kernel regressions for four transitions shown on Figure 4. The sections I shows confidence intervals and the other kernel in the pair for all four transitions.

Part II expands Section 5 in the paper that analyzes three pairs of kernel regressions: (S, E) , (S, T) and (S, V) . However, the four institutional variables $E, S, T,$ and V have 6 pairs of relations. Section II analyzes the remaining three pairs listed in the headline.

All 2×7 graphs are shown in the same format given in Table 1 that is slightly simpler than the one used in the paper. It is a main problem that all four variables have transitions, generating spuriousness in the relations studied.

Table 1. Legend to the 6 figures

Black circles	High income countries: West and East Asian convergers: Japan, South Korea and Taiwan
Dark gray squares	Authoritarian Far East: Hong Kong, Singapore
Hollow circles	Others

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The two authoritarian East Asian countries – from now HKS – are outliers relative to other high-income countries on nearly all graphs, as they have less democracy, more economic freedom and more triplet (i.e. political capitalism, state capture, and crony capitalism) than other high-income countries, but the same corruption.

The five variables are the same as in the paper. They are: *E*, economic freedom; *S*, triplet; *T*, corruption; *V*, democracy; *y*, income. The paper reports sources.

I.1. The (E, y) pair: economic freedom and income

Figure I.1a. $E(y)$.
Economic freedom explained by income.
Transition of E .
Curve shown on Figure 4 in paper

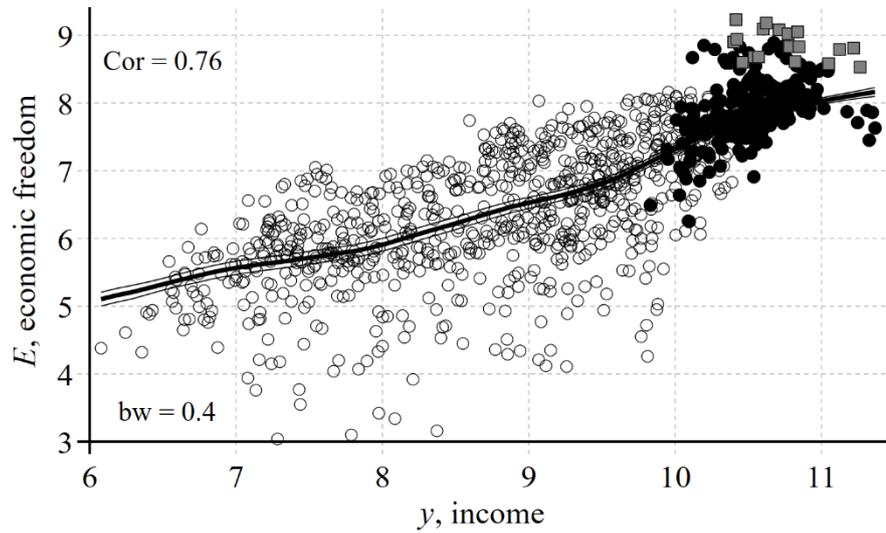
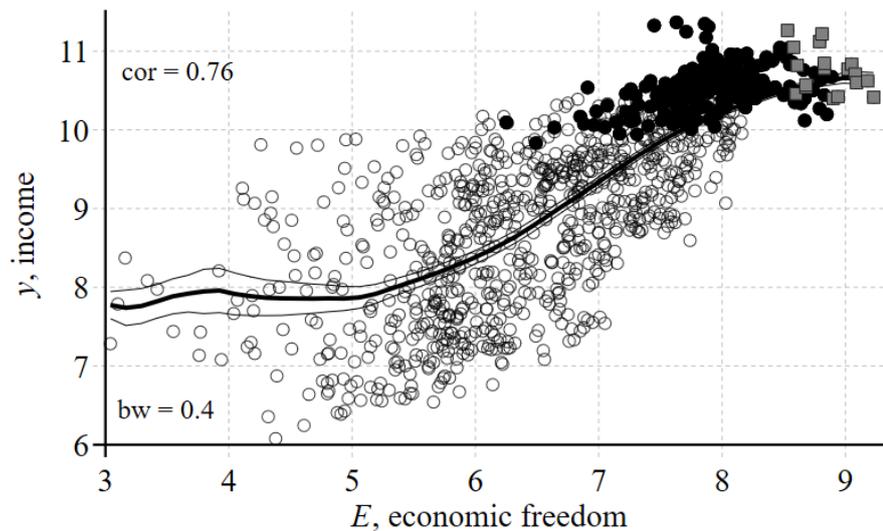


Figure I.1b. $y(E)$.
Income explained by economic freedom



Of the four transitions showed of Figure 4 on the paper the least convincing is the transition in E , as it is too linear as shown on I.1a. This, we conclude that the relation between economic freedom and income is simultaneous.

HKS deviate somewhat as having more economic freedom. But they are not so extreme as on graphs showing democracy.

I.2. The (S, y) pair: triplet and income

Figure I.2a. $S(y)$.
Triplet explained by
Income.
Transition of S
Figure 3a and on
Figure 4 in paper

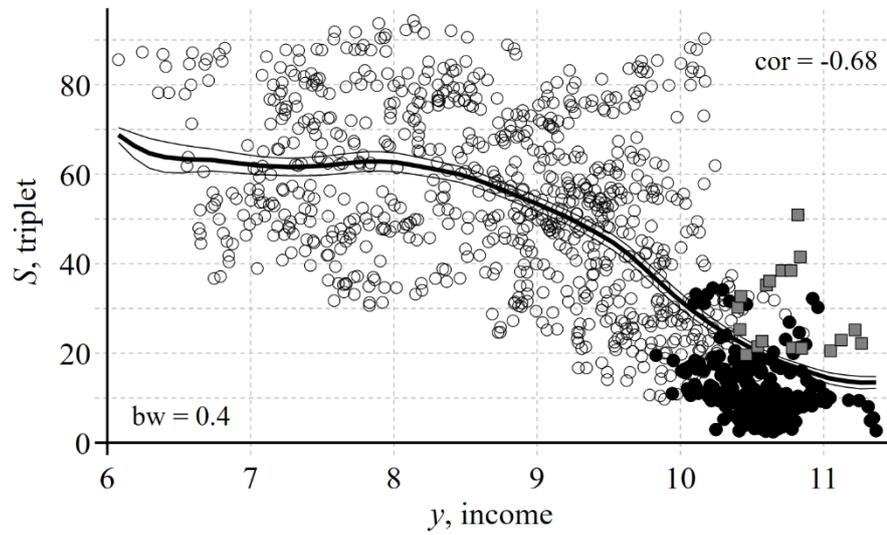
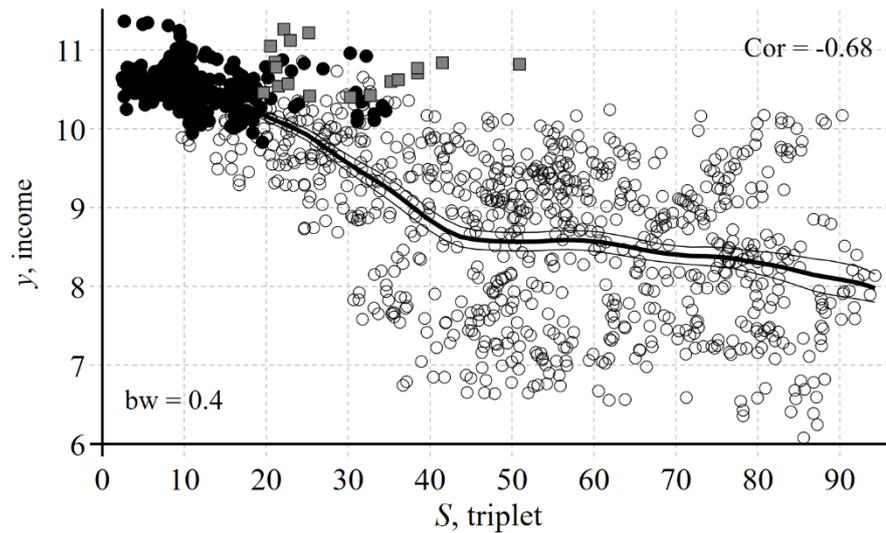


Figure I.2b. $y(S)$.
Income explained by
Triplet.
Figure 3b in paper



These kernels are reported in the paper as Figure 3. Here Figure I.2a is a neat transition curve, while Figure I.2b is a weak reflection

HKS deviate by having relatively high S -scores. The two countries deviate more by S than by E . This seems to be a new fact.

I.3. The (T, y) pair: corruption and income

Figure I.3a. $T(E)$.
Corruption explained
by income
Curve shown on
Figure 4 in paper

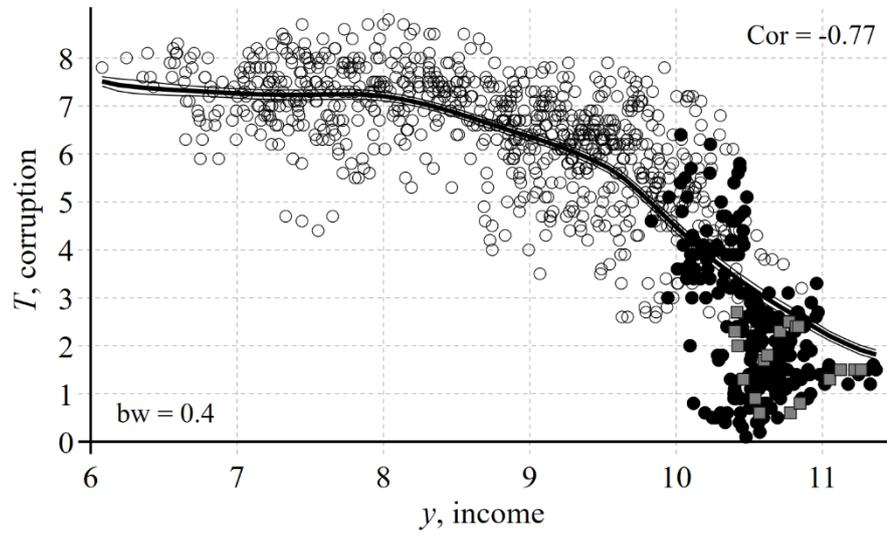
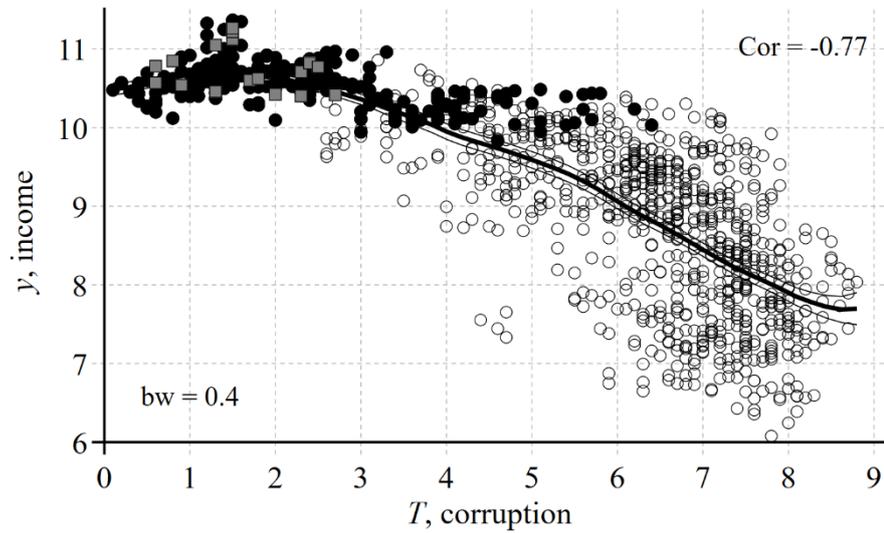


Figure I.3b. $E(T)$.
Income explained by
corruption



Here the same story applies. Figure I.3a is a neat transition curve while Figure I.3b is a weak reflection.

HKS do not deviate. Their corruption is as low as in other high-income countries.

I.4. The (V, E) pair: democracy and income

Figure I.4a. $V(y)$.
Democracy explained
by income
Curve shown on
Figure 4 in paper

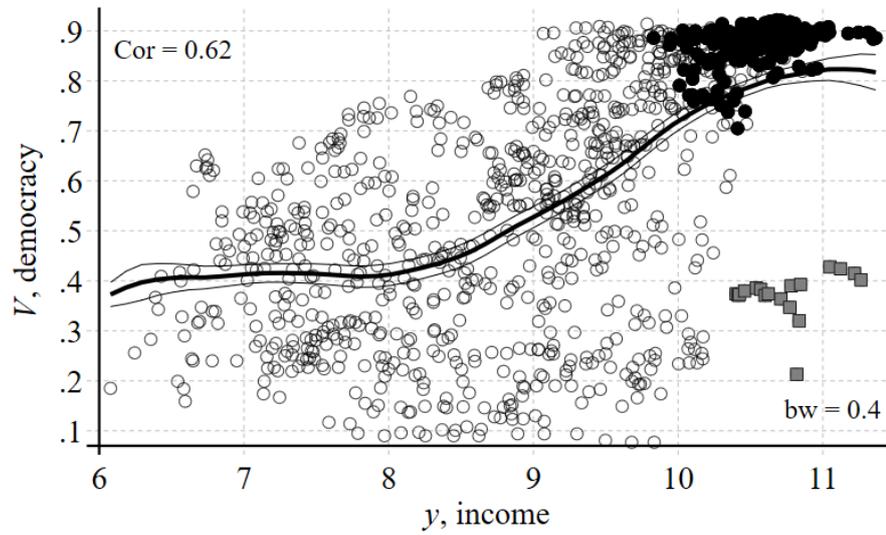


Figure I.4b. $y(V)$.
Income explained by
democracy

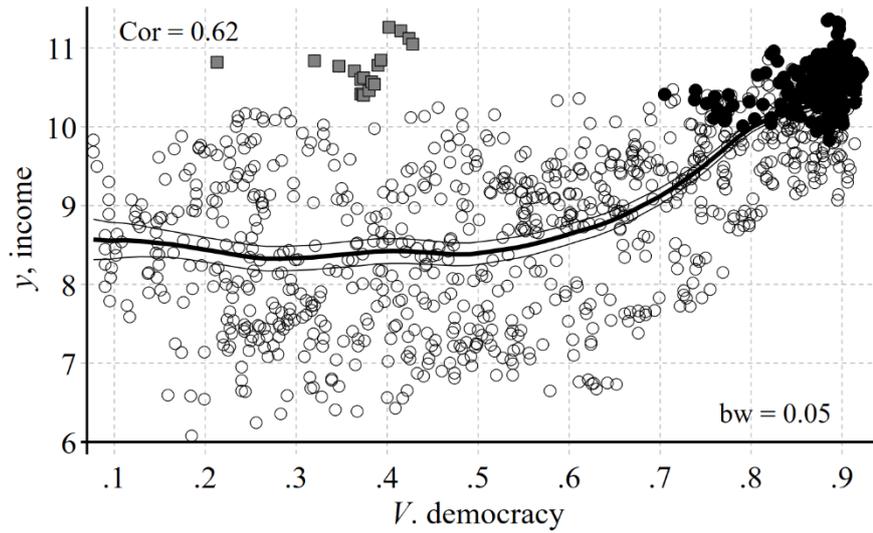


Figure I.4a shows a neat transition, while Figure I.4b shows very little.

HKS deviate very much. Hong Kong has changed from being a British colony to becoming a Chinese province. And Singapore is well-known for its authoritarian regime.

II.1. The (T, E) pair: corruption and economic freedom

Figure II.1a. $T(E)$.
Corruption explained
by economic freedom

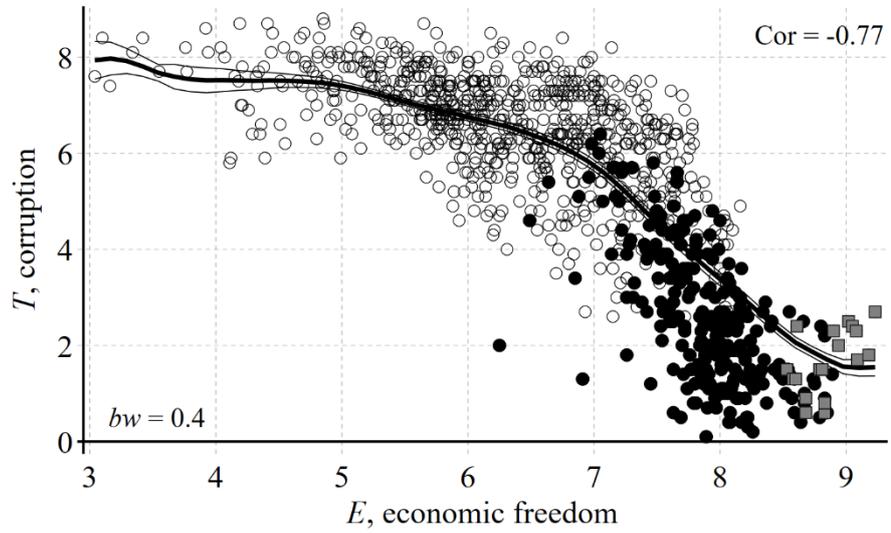
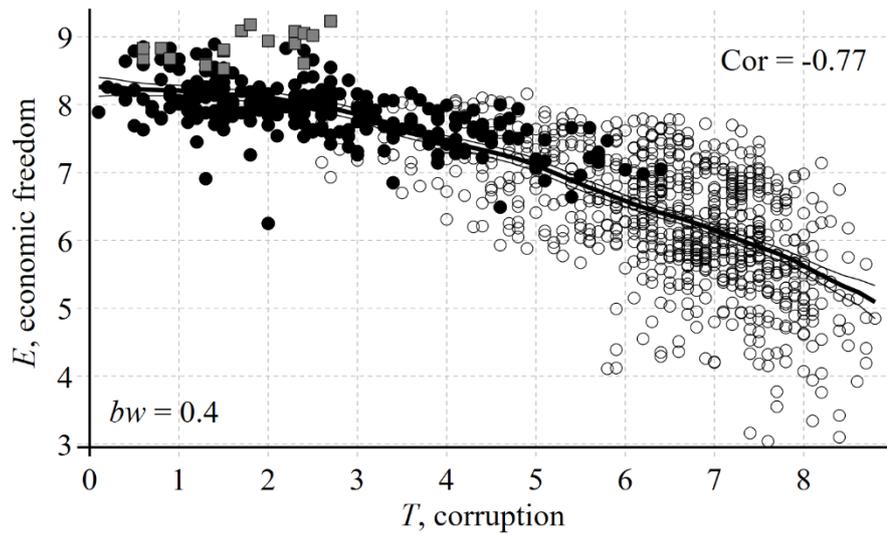


Figure II.1b. $E(T)$.
Economic freedom
explained by corruption



It is clear that Figure 1a is the obverse. While T has a strong transition the transition is weaker in E . Thus, the T -transition dominates in Figure 1a, that looks much like the $T(y)$ transition.

Figure 1b is flat for T in the interval $[0, 2.5]$, while E falls linearly but slowly for higher values of T . This is by the definition of the E index that falls with less law and order.

HKS combines unusually high E s with the same low T s as other high-income countries.

II.2. The (T, V) pair: corruption and democracy

Figure II.2a. $T(V)$.
Corruption explained
by democracy

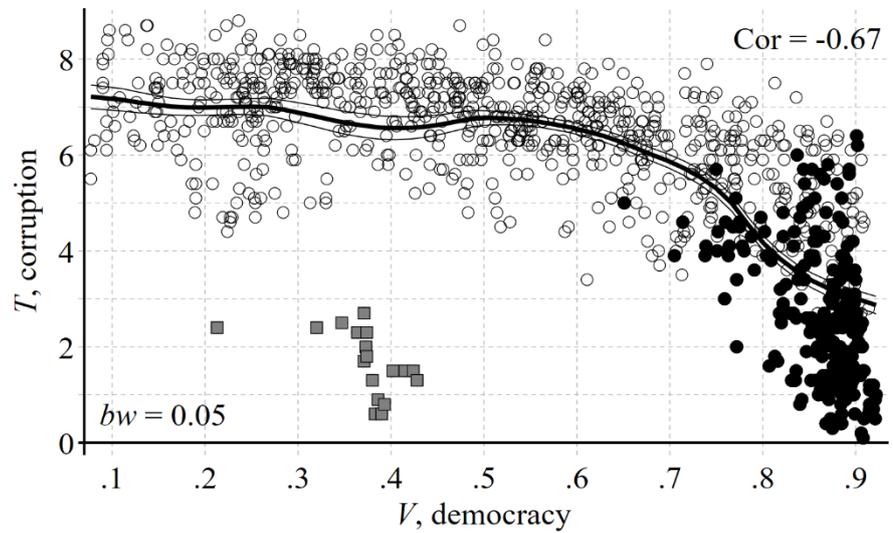
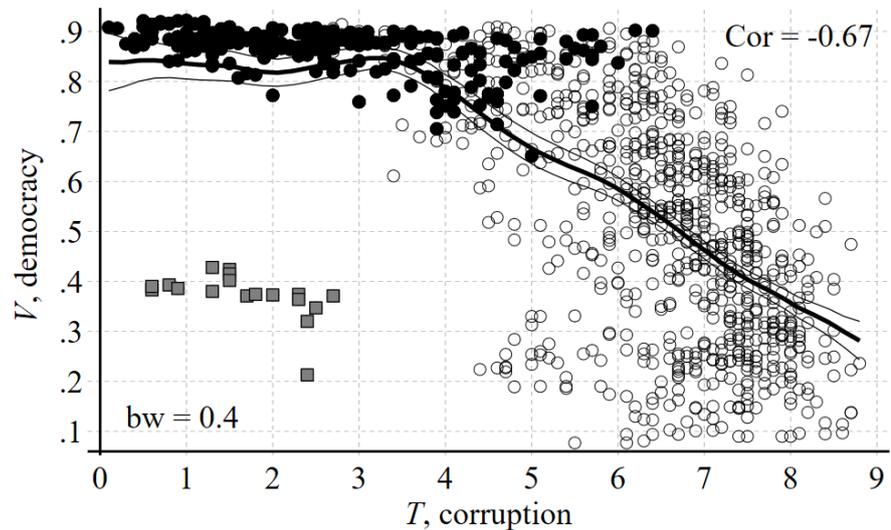


Figure II.2b. $V(T)$.
Democracy explained
by corruption.



It is difficult to point to the obverse kernel.

Figure II.2a looks much like Figure II.1a, but the HKS countries move from the right side on Figure II.1a to the left-hand side on Figure II.2a as they are much less democratic than other high-income countries.

Figure 2b looks as it is truncated at $V = 0.9$, and it has a kink at $V = 3.4$. The old West countries have almost perfect democracy close to $V = 0.9$, but the index does not reach any higher.

II.3. The (V, E) pair: democracy and economic freedom

Figure II.3a. $V(E)$.
democracy explained
by economic freedom

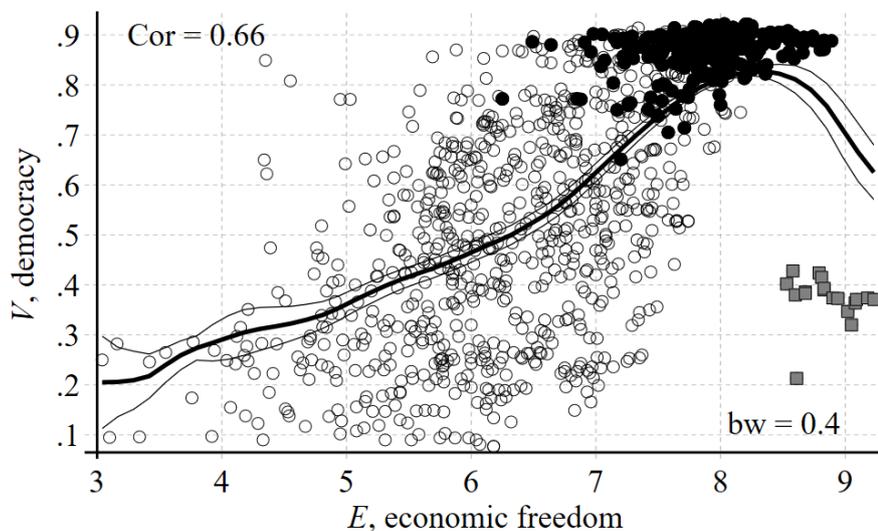
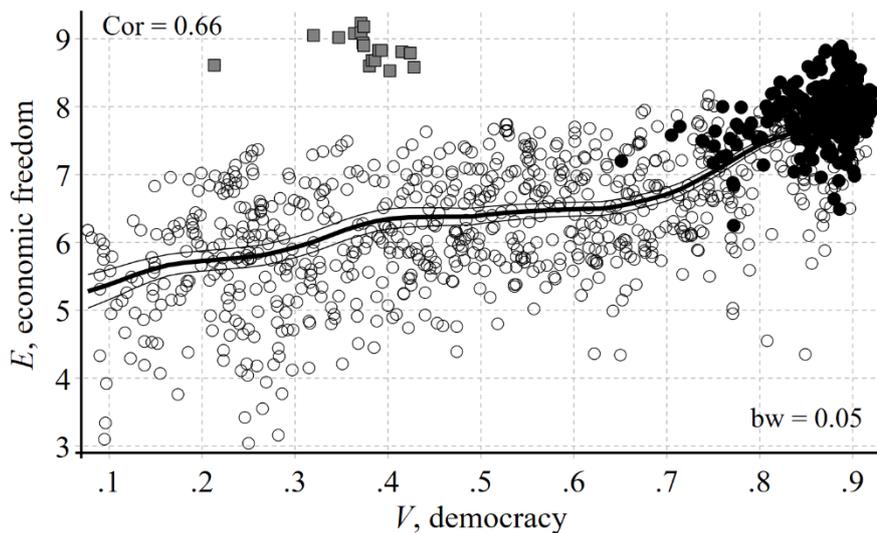


Figure II,3b. $E(V)$.
Economic freedom
explained by democracy



Here the HKS countries are outliers on both axes, so they deviate substantially. They even make the kernel curve bend down at the end on Figure 1a. If they are deleted the curve comes to look much like the democratic transition.

Figure 3a is the obverse. Economic freedom is good for democracy, but Figure 3b shows that democracy is also good for democracy, but here the slope is smaller.

4. Conclusion

The four transition pairs confirm the transition relation in three of the pairs $S(y)$, $T(y)$ and $V(y)$, while $E(y)$ rather looks like a simultaneous relation.

The three extra pairs (T, E) , (T, V) , and (V, E) show simultaneity. The economic theory for the three relations is vague, as it only predicts the sign of the slope – they are as expected. The transitions are in the four series make the six curves spurious.

References:

- Kaufmann, D., 2024 State Capture Matters: Considerations and empirics toward a worldwide measure. Posted on <https://governanceactionhub.org/explorations/local-global-coordination-for-impact/state-capture-index/>
- Paldam, M., Saadaoui, J., 2026. The development of the economic system in the long run: From political to market capitalism. Posted on : <http://martin.paldam.dk/GT-Main2.php>