Appendix for
Business Cycle Accounting East and West: Asian Finance and the Investment Wedge

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1 Wedges with alternative specification: Variable capital utilization

Following CKM, we consider an alternative specification of the technology allowing for variable instead of fixed capital utilization. This specification is due to Kydland and Prescott (1988) and Hornstein and Prescott (1993). We assume that the production function is now

$$y = A\,(kh)^{\alpha}\,(nh)^{1-\alpha}\,,$$

where n is the number of workers employed and h is the length (or hours) of the workweek. Labor input is given by $l = nh$.

We assume that the number of workers n is constant and that all the variation in labor is from the workweek h. Under the assumption of variable capital utilization, the services of capital kh are proportional to the product of the stock k and the labor input l. So, variations in the labor input induce variations in the flow of capital services. The capital utilization rate is proportional to the labor input l, and the efficiency wedge is proportional to y/k^{α}.

This change of specification results in different realized wedges, and thus different contributions of each wedge to crises and recoveries. The output paths and realized values for the efficiency, labor, and investment wedges with variable capital utilization for all countries

are depicted in Figure A1, and the contributions to output drops and recoveries are reported, respectively, in Tables A1 and A2. Not surprisingly, relative to the baseline case, the importance of the efficiency wedge falls and the contributions of the labor and investment wedges increase. Nevertheless, on average, the order of importance remains the same as before, for both drops and recoveries. The efficiency is more important than the labor wedge, and the investment wedge comes third.

Table A3 is a VCU-analog of Table 5. Most of our findings remain qualitatively unchanged. Only a couple of differences are worth mentioning. First, in Panel B, the regression of the contribution of the investment wedge on the Asian dummy loses significance, with a p-value of 0.198. However, once we run the robust regression routine to correct for outliers, the coefficient becomes significant again, with the p-value dropping to 0.001. In Panel C, the negative correlation between severity and the contribution of the labor wedge becomes significant for the overall sample, while in Panel D, the contribution of the labor wedge to the recovery is now significantly correlated with the contribution of the same wedge to the drop. In general, the regression results reported in Table A3 remain very similar when we run robust regression instead of OLS. There are only two exceptions. First is the Panel B regression mentioned above. Second, in Panel C, within the Asian subsample, the regression of the size of the output drop on the contribution of the labor wedge yields an insignificant coefficient when we use the outlier-correcting routine.

Finally, we correlate our measures of banking distress with the VCU contributions of the investment wedge to the drop. As before, we find positive but insignificant correlations.

References

[1] Hornstein, A., Prescott, E.C., 1993. The Firm and the Plant in General Equilibrium Theory, In General Equilibrium, Growth, and Trade, Vol. 2, edited by R. Becker et al. San Diego: Academic Press, 393–410.

[2] Kydland, F.E., Prescott, E.C.,1988. The Workweek of Capital and Its Cyclical Implications, Journal of Monetary Economics 21, 343–360.

TABLE A1. CONTRIBUTIONS OF WEDGES TO OUTPUT DROPS WITH ALTERNATIVE SPECIFICATION: VARIABLE CAPITAL UTILIZATION

		Contribution (%) of each wedge		
Country	Pre-crisis Year	Efficiency wedge	Labor wedge	Investment wedge
Argentina	1980	55.90	22.54	3.65
	1984	67.74	11.38	16.54
	1988	68.75	3.00	23.84
	1994	-25.03	153.26	-4.98
	2001	30.00	74.94	-2.21
Brazil	1987	148.71	66.37	-124.39
	1991	-3.34	88.71	-23.73
	1998	38.24	28.21	6.50
Chile	1981	12.58	78.02	-9.33
	1998	31.04	29.44	68.42
Finland	1990	29.93	30.51	16.64
Indonesia	1997	59.47	-29.02	76.20
Israel	1983	19.47	117.47	134.49
Korea	1997	23.89	34.16	41.80
Malaysia	1997	64.46	-16.34	57.79
Mexico	1981	69.21	-37.49	179.16
	1994	57.13	-1.97	-39.83
Philippines	1983	59.40	10.06	41.37
	1997	-90.88	170.99	25.35
Sweden	1991	-29.76	82.86	22.39
Thailand	1997	66.39	-34.98	75.59
Turkey	1993	101.73	-2.06	-8.52
	2000	86.64	-6.56	13.24
Average		40.94	37.98	25.65

TABLE A2. ROLE OF WEDGES DURING POST-CRISIS YEARS WITH ALTERNATIVE SPECIFICATION: VARIABLE CAPITAL UTILIZATION

		Recovery				**Data minus Model**		
Country	Pre-crisis Year	Data (A)	Model without Efficiency wedge (B)	Model without Labor wedge (C)	Model without Investment wedge (D)	$\varkappa_{i,t+1}$**(Efficiency)** [=(A)−(B)]	$\varkappa_{i,t+1}$**(Labor)** [=(A)−(C)]	$\varkappa_{i,t+1}$**(Investment)** [=(A)−(D)]
Argentina	1980	-1.63	-1.47	0.39	-0.52	**-0.16**	**-2.02**	**-1.11**
	1984	2.72	1.06	-0.09	3.69	**1.66**	**2.81**	**-0.97**
	1988	9.89	-1.00	4.74	13.70	**10.89**	**5.15**	**-3.81**
	1994	11.82	6.23	6.64	11.97	**5.59**	**5.18**	**-0.15**
	2001	21.24	2.74	26.07	15.13	**18.50**	**-4.83**	**6.11**
Brazil	1987	-1.43	3.62	-1.85	-3.45	**-5.05**	**0.42**	**2.02**
	1991	7.51	1.98	9.13	6.69	**5.53**	**-1.62**	**0.82**
	1998	2.30	8.24	-3.48	2.96	**-5.94**	**5.78**	**-0.66**
Chile	1981	-6.95	4.54	-15.12	-3.64	**-11.49**	**8.17**	**-3.31**
	1998	0.45	0.24	1.27	-0.70	**0.21**	**-0.82**	**1.15**
Finland	1990	-8.49	-14.68	-3.27	-1.67	**6.19**	**-5.22**	**-6.82**
Indonesia	1997	-1.75	-5.55	2.05	-6.43	**3.80**	**-3.80**	**4.68**
Israel	1983	8.52	0.09	3.00	13.06	**8.43**	**5.52**	**-4.54**
Korea	1997	1.61	5.16	-3.67	1.57	**-3.55**	**5.28**	**0.04**
Malaysia	1997	-3.11	-4.37	-4.26	0.66	**1.26**	**1.15**	**-3.77**
Mexico	1981	-7.31	-4.12	-10.16	9.13	**-3.19**	**2.85**	**-16.44**
	1994	7.50	4.53	7.72	5.92	**2.97**	**-0.22**	**1.58**
Philippines	1983	-6.60	0.75	-12.07	-2.21	**-7.35**	**5.47**	**-4.39**
	1997	6.33	7.40	-1.31	8.13	**-1.07**	**7.64**	**-1.80**
Sweden	1991	0.70	-8.59	7.79	2.65	**9.29**	**-7.09**	**-1.96**
Thailand	1997	-3.92	-18.66	8.63	-6.53	**14.74**	**-12.55**	**2.61**
Turkey	1993	9.23	-3.97	16.89	7.30	**13.20**	**-7.66**	**1.93**
	2000	9.14	-4.04	18.06	4.42	**13.18**	**-8.92**	**4.72**
Average		2.51	-0.86	2.48	3.56	**3.38**	**0.03**	**-1.05**

Note. The size of recovery in data is measured as $(y_{i,t+4}-y_{i,t+1})$.

TABLE A3. CORRELATING WEDGES AND OBSERVABLES: VCU ANALYSIS

(A) Severity regressed on Asian dummy

	Output Drop	Recovery	Drop minus Recovery
Asia	5.110**	−5.076	10.186**
	(2.169)	(3.420)	(3.862)
p-value	0.028	0.153	0.015
Observations	23	23	23

(B) Contribution of each wedge regressed on Asian dummy

	Efficiency wedge	Labor wedge	Investment wedge
Asia	-0.142	-0.210	0.370
	(0.236)	(0.275)	(0.279)
p-value	0.554	0.455	0.198
Observations	23	23	23

TABLE A3. CORRELATING WEDGES AND OBSERVABLES: VCU ANALYSIS (CONT'D)

(C) Size of the output drop regressed on contribution of each wedge

	Output Drop (All crises)			Output Drop (Asian crises)		
Efficiency wedge	2.689			7.402*		
	(2.160)			(2.839)		
p-value	0.227			0.060		
Labor wedge		-4.450**			-6.538**	
		(1.642)			(1.762)	
p-value		0.013			0.021	
Investment wedge			0.707			26.205***
			(1.824)			(4.94)
p-value			0.703			0.006
Observations	23	23	23	6	6	6

(D) Contribution to recovery regressed on contribution to drop

	Contribution to recovery		
	Efficiency	Labor	Investment
Contribution to drop: Efficiency	5.219		
	(3.261)		
p-value	0.124		
Contribution to drop: Labor		4.505**	
		(1.967)	
p-value		0.032	
Contribution to drop: Investment			2.532
			(1.618)
p-value			0.133
Observations	23	23	23

TABLE A3. CORRELATING WEDGES AND OBSERVABLES: VCU ANALYSIS (CONT'D)

(E) Size of the recovery regressed on contribution of each wedge

	Recovery (All crises)			Recovery (Asian crises)		
Efficiency wedge	0.586***			-0.078		
	(0.165)			(0.298)		
p-value	0.002			0.807		
Labor wedge		-0.072			0.268	
		(0.279)			(0.271)	
p-value		0.799			0.379	
Investment wedge			0.825**			0.119
			(0.294)			(0.637)
p-value			0.011			0.861
Observations	23	23	23	6	6	6

Note. In all panels, each column denotes a different dependent variable, which is regressed on a single independent variable and an intercept. Standard errors are reported in parenthesis below the corresponding parameter estimates. Asterisks *, **, and *** indicate 10%, 5%, and 1% statistical significance, respectively.

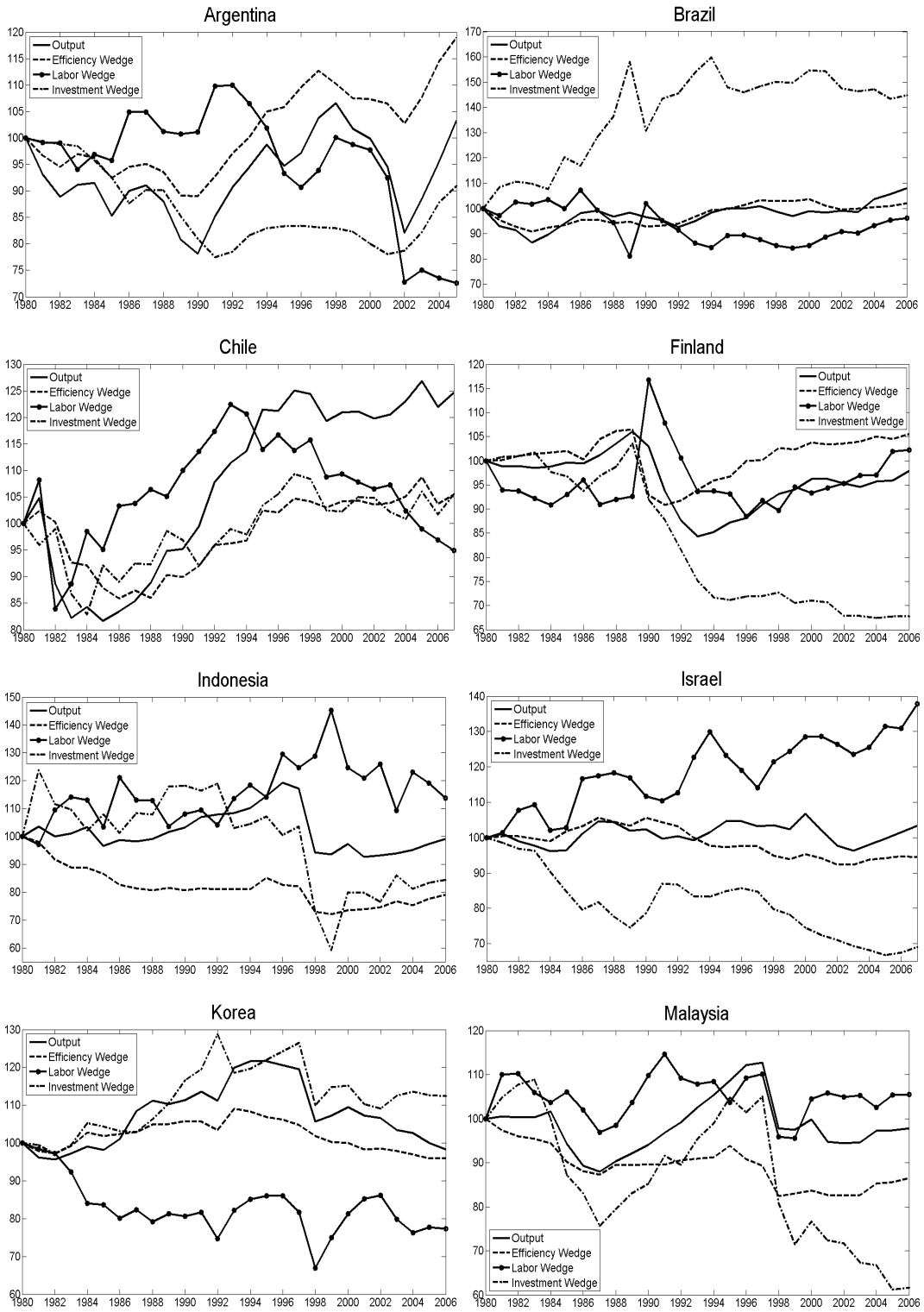

FIGURE A1. OUTPUT PATHS AND THREE MEASURED WEDGES USING THE MODELS WITH VARIABLE CAPITAL UTILIZATION: ALL VALUES ARE NORMALIZED TO EQUAL 100 IN 1980. FOR TURKEY, IN 1988.

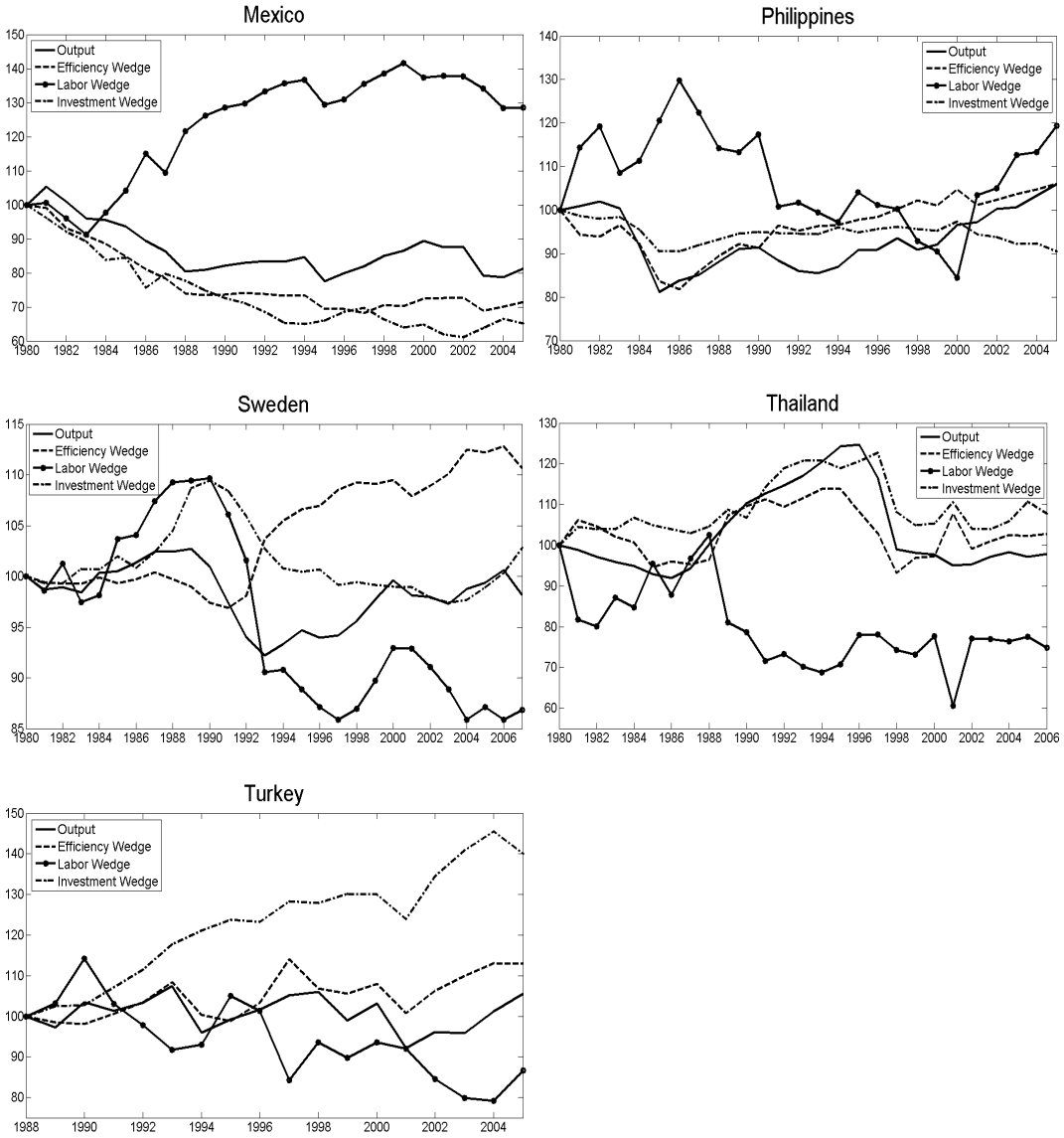

FIGURE A1. OUTPUT PATHS AND THREE MEASURED WEDGES USING THE MODELS WITH VARIABLE CAPITAL UTILIZATION: ALL VALUES ARE NORMALIZED TO EQUAL 100 IN 1980. FOR TURKEY, IN 1988. (CONTINUED)