Discussion: Liquidity and Trading Dynamics

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Ideas

- Facts: In the U.S., 1947-1984 and 1985-2007 look different in that
  - volatility in real GDP fell from the early period to the later one.
  - sectoral comovement declined as well.
- Attempt to explain these facts with the following mechanism:
  - environment with idiosyncratic sectoral shocks to productivity.
  - households sell in only one market and cannot insure against these sectoral shocks.
  - households are also buyers, and make transactions using currency and credit.
  - if a household's cash constraint binds, the household's consumption and production decisions can amplify aggregate productivity shocks, and there are spillovers across markets.
  - higher inflation makes it more likely that cash constraints bind for an individual household, and greater use of credit implies that cash constaints apply to fewer households.
  - lower inflation and greater use of credit in the 1985-2007 period than in the earlier period then potentially explain the key facts.

- It might occur to me that financial factors (e.g. deregulation and technological change in the financial sector) could explain these facts, but the proposed mechanism is not the most obvious one.
- Therefore, if the authors can construct a compelling model, show how the mechanism works theoretically, and then demonstrate that it also works quantitatively, I would have learned something important.

Model

- Lagos-Wright (2005), except competitive pricing in each market and three subperiods:
  - morning: production/consumption in separate markets; each household consumes in one market and produces in some other market; aggregate productivity shocks and market-specific productivity shocks; consumer in household does not see the household's shock; labor supply endogenous.
  - afternoon: same as morning, except fixed endowment sold in each market.
  - evening: one settlement market on which money and goods are traded.

- Basic model, with currency transactions only (anonymous trade in morning and afternoon):
  - suppose binding cash constraint for household.
  - positive aggregate productivity shock implies that consumer is likely to have more cash at the beginning of the afternoon - spends more in the morning (demand effect and spillovers across markets).
  - negative wealth effect on household implies labor supply higher in morning - implies positive supply effect.
  - amplification of aggregate shock.
  - cash constraints more likely to bind the higher the money growth rate (and inflation rate).
- Include credit - the more credit the less this effect matters.
- Friedman rule yields an efficient allocation - at the Friedman rule the mechanism is inoperative.

Comments: Theory

- Is Lagos-Wright quasilinearity just an innocuous simplification?
  - Suppose a model like Lucas (1980), but with uninsurable sectoral productivity shocks.
  - Household's consumer does not observe producer's shock during the period, but observes aggregate shock.
  - Same mechanism should work, but analytical results would be hard to come by.
  - However, Friedman rule is not feasible (Bewley) - monetary policy can't fix the incomplete markets friction.
- If we take the model in the paper seriously, Friedman rule is efficient - why was monetary policy closer to being efficient in the later period than in the earlier period?

Comments: Calibration

- Key elements in the model:
  - a subperiod represents the length of time between opportunities to exchange other assets for currency.
  - credit is used in monitored transactions, currency is used in non-monitored transactions.
- A period is one year, so I am permitted to exchange assets for currency three times per year!
- What is credit? The model is essentially calibrated to the stock of credit card debt.
  - if credit is what is used in monitored transactions, this should include checks and debit cards.
  - but isn't a check or a debit card just "money?" - settlement is quick relative to what it is for a credit card.
  - no, checks and debit cards involve a transfer of the ownership of a private liability - they are different from Federal Reserve notes.
- What is money? - looks like currency in the model, but M1 is used in the calibration - should not include inside money.

- Numbers used in the calibration:
  - 4.7% of transactions involve credit in the early period.
  - 43.8% of transactions use credit in the later period.
- Would like to know more about the flow of transactions and use of alternative payments instruments, rather than calibrating to stocks.

- B.I.S. numbers: Total value settled/GDP for 2006
  - Checks: 5.79
  - Debit Cards: .078
  - Credit Cards: .1476
- Average value per transaction:
  - Checks: $1366
  - Debit Cards: $39
  - Credit Cards: $87

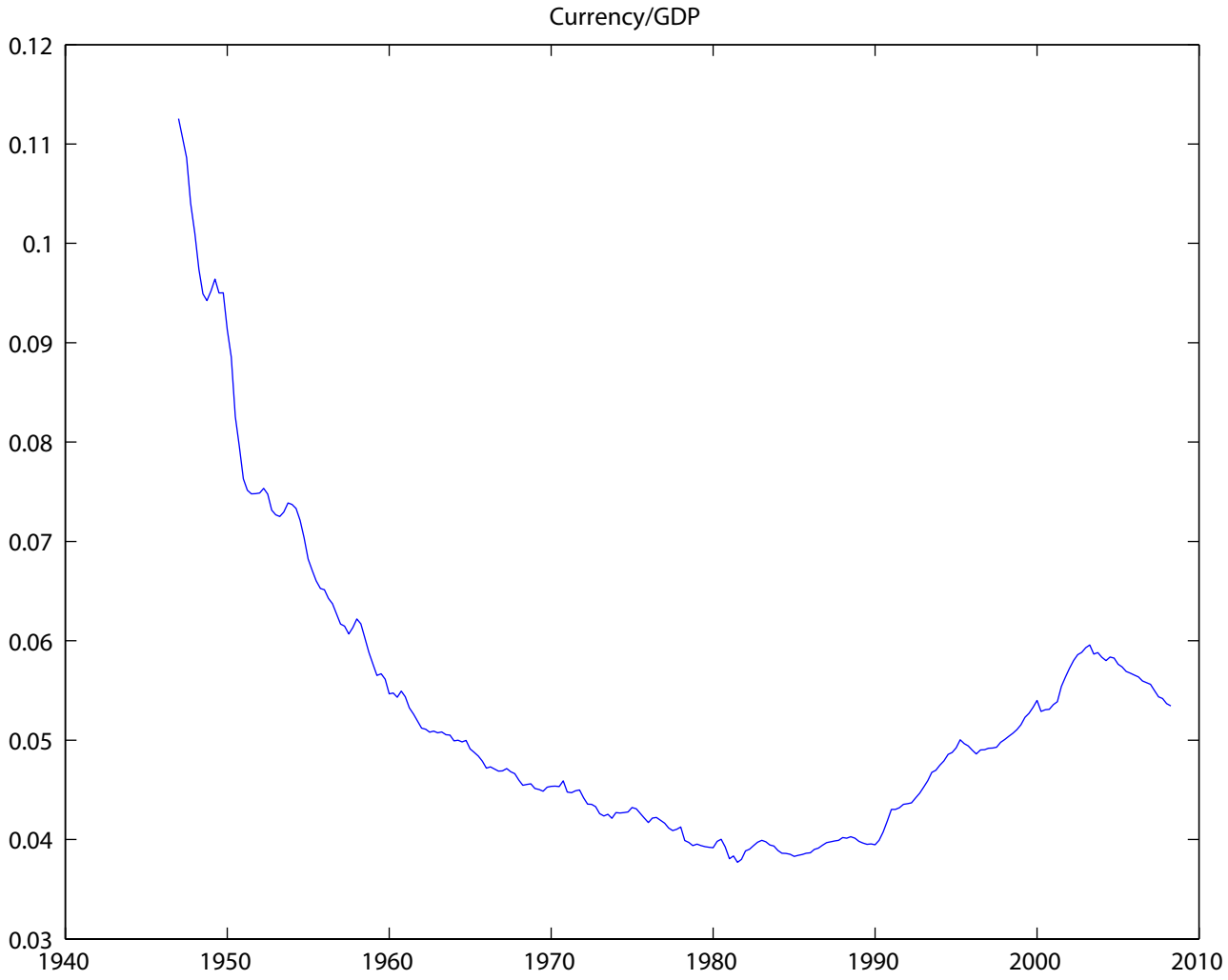
Currency/GDP
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
1940
1950
1960
1970
1980
1990
2000
2010

Table 2

Banknotes and coin in circulation

(end of year)

	Total value *(USD billions)* [1]					Value per inhabitant *(USD)* [1]				
	2002	**2003**	**2004**	**2005**	**2006**	**2002**	**2003**	**2004**	**2005**	**2006**
Belgium	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Canada	28.69	35.76	40.36	43.46	45.87	914.2	1,128.6	1,261.3	1,345.2	1,405.4
France	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Germany	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Hong Kong SAR	15.98	18.13	19.73	20.16	21.16	2,376.0	2,680.7	2,902.4	2,947.7	3,066.2
Italy	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Japan	673.12	760.61	804.14	711.51	708.00	5,279.9	5,956.5	6,292.8	5,568.7	5,541.2
Netherlands	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Singapore	7.79	8.26	9.24	9.57	11.05	1,865.9	1,972.6	2,179.8	2,205.0	2,464.0
Sweden	12.26	15.15	16.44	13.96	16.37	1,373.4	1,691.5	1,828.2	1,545.6	1,802.8
Switzerland	29.10	33.90	36.79	33.60	37.84	3,963.6	4,577.6	4,936.0	4,479.1	5,007.0
United Kingdom	59.13	68.92	79.45	73.03	87.48	996.8	1,157.3	1,327.6	1,212.3	1,443.9
United States	687.53	724.17	754.86	793.99	820.14	2,383.7	2,486.1	2,567.0	2,676.6	2,735.6
Euro area	388.99	579.71	703.68	686.42	850.94	1,263.1	1,870.7	2,256.3	2,188.3	2,700.1
CPSS excl euro area [2]	**1,513.60**	**1,664.91**	**1,761.01**	**1,699.28**	**1,747.92**	**2,835.6**	**3,097.3**	**3,254.1**	**3,119.8**	**3,184.9**
CPSS incl euro area [2]	**1,902.59**	**2,244.62**	**2,464.69**	**2,385.70**	**2,598.86**	**2,260.3**	**2,648.7**	**2,889.3**	**2,779.4**	**3,008.0**

Table 2 (cont)

	Value as a percentage of GDP					Value as a percentage of narrow money				
	2002	**2003**	**2004**	**2005**	**2006**	**2002**	**2003**	**2004**	**2005**	**2006**
Belgium	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Canada	3.92	3.82	3.76	3.68	3.70	14.70	14.22	13.66	13.32	12.66
France	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Germany	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Hong Kong SAR	9.76	11.40	11.87	11.30	11.16	48.04	39.68	37.17	44.87	42.41
Italy	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Japan	16.25	16.59	16.54	16.70	16.58	22.94	22.38	21.81	20.99	21.16
Netherlands	nap	nap	nap	nap	nap	nap	nap	nap	nap	nap
Singapore	8.54	8.73	8.36	8.20	8.07	37.77	36.27	34.18	34.57	32.43
Sweden	4.42	4.33	4.15	4.06	3.88	12.47	12.05	11.47	10.22	9.22
Switzerland	9.66	9.81	9.34	9.45	9.40	17.45	14.78	15.25	15.10	16.42
United Kingdom	3.47	3.44	3.47	3.44	3.43	5.21	4.95	4.86	4.60	4.48
United States	6.57	6.61	6.46	6.39	6.22	55.22	54.37	53.87	56.86	59.08
Euro area	5.12	9.71	9.73	9.89	7.69	14.84	16.83	17.52	16.72	17.20
CPSS excl euro area[2]	**8.65**	**8.87**	**8.61**	**7.94**	**7.82**	**25.97**	**24.49**	**23.54**	**23.82**	**23.18**
CPSS incl euro area[2]	**7.82**	**8.25**	**8.19**	**7.61**	**7.90**	**22.52**	**21.91**	**21.44**	**21.23**	**20.81**

Please refer to the individual country tables for a detailed explanation.

[1] Converted at end-of-year exchange rates. [2] Sum or average excluding those countries for which data are not available.

Chart 1

Value of Bank Notes in Circulation as a Percentage of Gross Domestic Product, 1985–2004

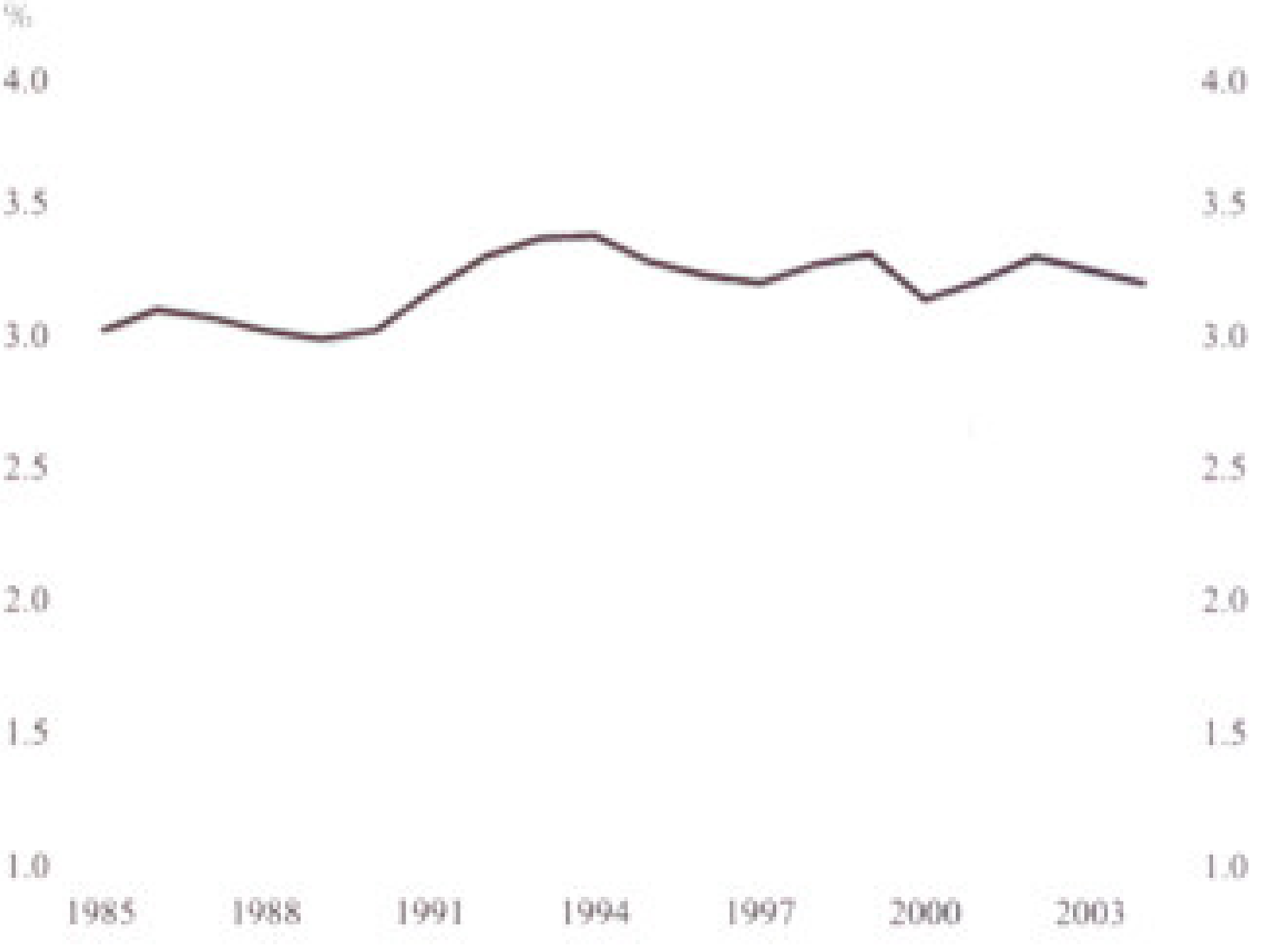

Chart 2

Estimated Transactions, by Payment Method at the Point of Sale

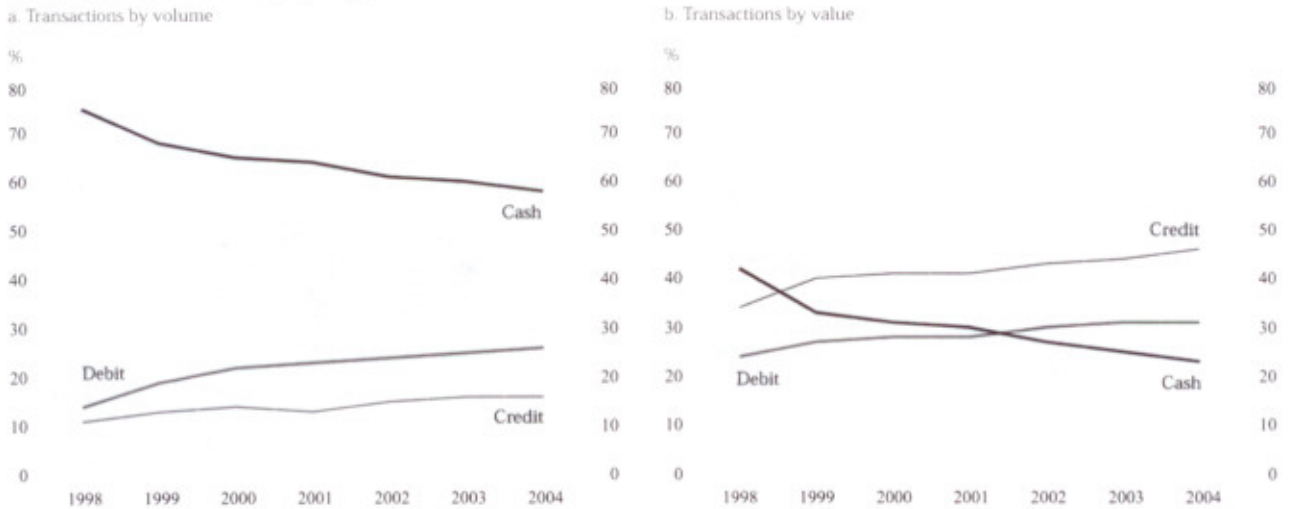

Chart 3

Distribution of the Value of Bank Notes Held for Transactions Purposes

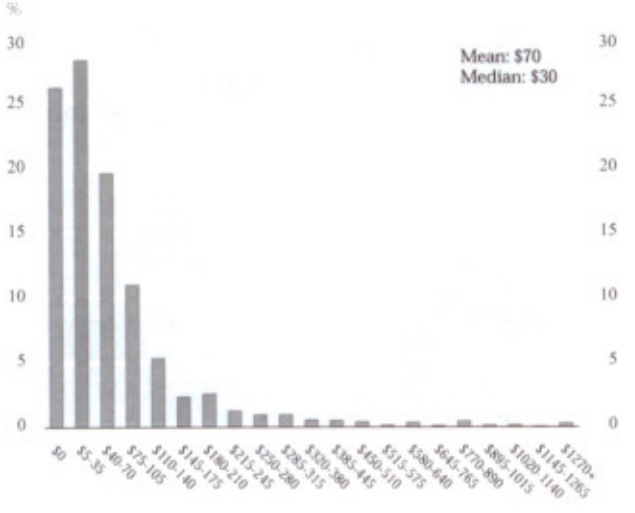

Chart 4

Denominations of Bank Notes Held for Transactions vs. Notes in Circulation