

## United States: Selected Issues

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UNITED STATES

**Selected Issues**

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Approved by Western Hemisphere Department

June 29, 2006

	Page
Contents	
<b>I. The Attractiveness of U.S. Financial Markets: The Example of Mortgage Securitization</b> .....	4
A. Securitization and Recent Trends in Mortgage Markets .....	4
B. U.S. Housing Finance and Global Investors.....	6
C. Has It Gone Too Far?.....	10
D. Conclusion .....	12
Boxes	
1. U.S. House Price Estimates .....	11
Figures	
1. Mortgage Securitization in the U.S. Market.....	4
2. Residential Investment and Mortgage Growth.....	5
3. Mortgage Issuance by Institution.....	5
4. U.S. Net Foreign Asset Position and Foreign Holdings of Agency and GSE Securities.....	6
5. U.S. Share of Global Debt Securities Outstanding.....	7
6. Currency Denomination of Financial Products, 2004 .....	7
7. Foreign Participation in Major Financial Markets.....	8
8. Mortgage-Backed Securities Spread.....	9
9. House Price Inflation .....	10
10. Housing Activity and Home Ownership.....	10
11. Model Estimation of House Price Index.....	11
12. Home Equity Loan Asset-Backed Securities Spread to LIBOR.....	12
References.....	13

II.	<b>Recent Trends in Labor Supply and Demand</b> .....	14
A.	Introduction.....	14
B.	What Explains Low Labor Market Participation? .....	14
C.	What Influenced Employment Growth? .....	18
D.	Conclusions.....	20
	Figures	
1.	United States: Labor Market Indicators.....	15
2.	Average Participation Rates by Age Cohorts, 1995-2005.....	16
3.	Contribution of Demographics to the Change in the Aggregate Participation Rate, 2000-2005 .....	16
4.	Change in Labor Force Participation Rate by Age Group, 2000-2005 .....	16
5.	Growth in Non-Residential Investment and Private Employment .....	19
	References.....	20
III.	<b>Challenges Facing the U.S. Electricity Sector</b> .....	23
A.	Introduction.....	23
B.	Evolution of the Electricity Sector.....	23
C.	Current Policy and Remaining Issues? .....	26
	Figures	
1.	Labor Productivity Growth in Electricity, Gas and Water Supply Industries .....	23
2.	Transmission Path Constraints in the United States .....	25
3.	Status of State Electric Industry Restructuring Activity.....	25
	References.....	27
IV.	<b>Recent Oil Price Developments and The Performance of the U.S. Economy</b> .....	29
A.	Recent Developments in Crude Oil and Primary Commodity Markets .....	29
B.	Do Rising Oil Prices Still Matter? .....	31
C.	Policy Implications .....	33
	Figures	
1.	Oil Market Developments.....	30
2.	U.S. Oil Intensity .....	32
3.	Energy Prices and Taxes.....	34
	References.....	34

V.	<b>U.S. Banking: Financial Innovation and Systemic Risk</b> .....	36
	A. Innovation in U.S. Banking .....	37
	B. Exposures and Risks at LCBGs .....	38
	C. Market-Based Surveillance.....	41
	D. Regulation and Oversight .....	44
	E. Conclusion .....	44
	 Boxes	
	1. Mortgage Market Innovation: A Structural Break? .....	39
	2. LCBG Sensitivity to a Real Estate Shock: A Material Issue? .....	40
	 Figures	
	1. U.S. Asset-Backed Securities as Share of Global Bond Market .....	36
	2. Financial Sector Assets, 2005 .....	37
	3. U.S. and Global Bank Profitability .....	41
	4. U.S. and Global Bank Asset Quality .....	41
	5. Distance to Default Indicators for the U.S. Financial System.....	43
	 References.....	44
VI.	<b>Structural Change and Competition Among Auto Manufacturers and Airlines</b> .....	45
	A. Introduction and Summary .....	45
	B. An Anatomy of Losses.....	45
	C. Intra-Industry Trends .....	47
	D. Conclusion .....	49
	 Figures	
	1. Pre-Tax Profits as Share Of Value Added .....	45
	2. Employee Compensation as Share Of Value Added .....	45
	3. U.S. Market Share of Major Auto Manufacturers and Airlines.....	46
	4. Relative Prices of Motor Vehicles and Air Travel .....	46
	5. Capacity Utilization .....	47
	6. Labor Productivity and Unit Labor Costs, 2000-2005 .....	47
	7. Auto Manufacturers: Net Income as a Share of Operating Revenues .....	47
	8. Airlines: Net Income as a Share of Operating Revenues.....	48
	 References.....	49

## I. THE ATTRACTIVENESS OF U.S. FINANCIAL MARKETS: THE EXAMPLE OF MORTGAGE SECURITIZATION<sup>1</sup>

1. *Despite projections that its current account deficit is likely to remain high, the United States has been an attractive destination for foreign capital in recent years.*

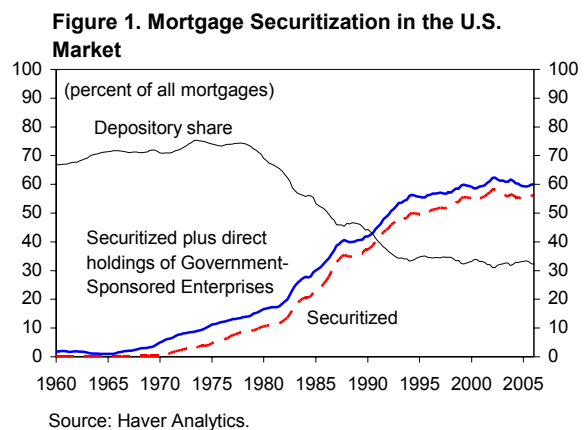
Foreigners held an estimated \$3.3 trillion in net U.S. assets (25 percent of GDP) at the end of 2005, and another \$800–900 billion (6–7 percent of GDP) are likely to be added by the end of 2006. Besides strong economic fundamentals and sound monetary policy, the ability of U.S. financial markets to intermediate domestic demand with foreign supply of funds at attractive risk-adjusted returns has helped sustain foreign inflows and support the dollar exchange rate.

2. *As an example, this paper discusses how financial innovation turned U.S. mortgages into an asset class with world-wide investor appeal.* Mortgage securitization enabled households to tap foreign savings while satisfying foreign investors' demand for higher returns on safe investments. The paper also asks whether a bubble in the housing market has developed as easy global financing conditions helped bring U.S. mortgage rates to historic lows. The answer is “probably not,” but regulatory vigilance remains essential to limit the potential fallout from a downturn—especially among smaller banks that have built up exposures to mortgage and construction loans.

### A. Securitization and Recent Trends in Mortgage Markets

3. *The securitization, or pooling, of home loans into mortgage-backed securities (MBS) has made the nationwide mortgage market significantly more efficient and less volatile over the past 20 years:*

- The U.S. housing market was historically composed of many local markets, and lending volumes depended on funding conditions of depositories in the region. Developers tended to build up housing inventories in anticipation of stronger demand when mortgage conditions would improve, contributing to regional boom and bust cycles (Schnure, 2005).
- With securitization, banks and other mortgage originators have been able to shift significant amounts of credit and market risks to MBS holders

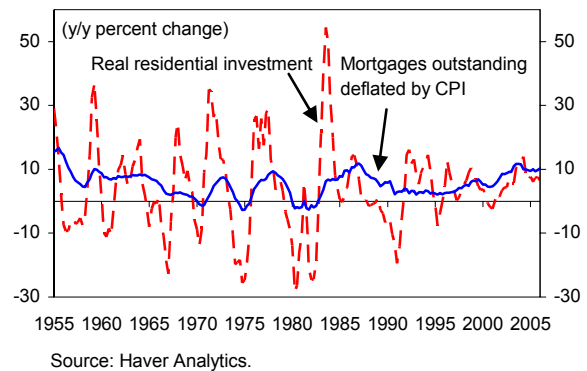


<sup>1</sup> Prepared by Martin Mühleisen.

(Figure 1), decoupling mortgage funding conditions from local deposit growth rates. Funding conditions are now determined in the national and international markets, and are therefore less volatile than before.

- This has helped housing activity and price developments to become less cyclical and converge across the United States (Peek and Wilcox, 2006; Figure 2).

**Figure 2. Residential Investment and Mortgage Growth**

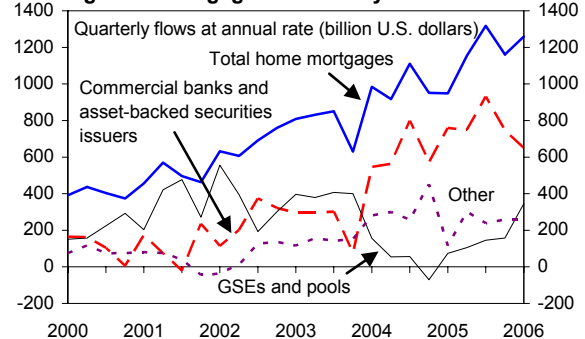


4. ***Securitization benefited from the fact that standard U.S. mortgages carry fixed interest rates for up to 30 years, much longer than in most other countries.*** Their long maturity makes them relatively easy to bundle, notwithstanding the fact that mortgages can also be easily refinanced or prepaid. Initially, the MBS' success also owed much to the role of government-sponsored housing enterprises (GSEs), such as Fannie Mae and Freddie Mac:

- Most of the pooling was historically done by the GSEs, who also guarantee cash flows on the underlying debt. These companies promoted greater uniformity in lending standards and lowered transaction costs, which contributed to improved market access for lower and middle-income households.
- The GSEs provided liquidity and market-making in the early stages of the market, as well as during periods of market turmoil in the 1990s. Given their favorable rating and low funding costs, the GSEs also gained from issuing commercial bonds and investing the proceeds in their own MBS issues and other securities.
- More recently, supervisors have become concerned that the GSEs' large MBS portfolios could pose systemic risks, given that their significant interest rate exposures are being hedged with other financial institutions. As of end-2005, the GSEs still held a combined 25 percent of MBS issued with their backing, down from the peak of 37 percent in 2003.

5. ***The bulk of securitization has lately been done by private mortgage institutions*** (Figure 3). Among other factors, this reflects both an increase in "jumbo" mortgages and a rising share of loans to non-prime borrowers, both of which cannot be included in a security with a GSE-backed default guarantee. This niche has been filled by private institutions, including banks and

**Figure 3. Mortgage Issuance by Institution**

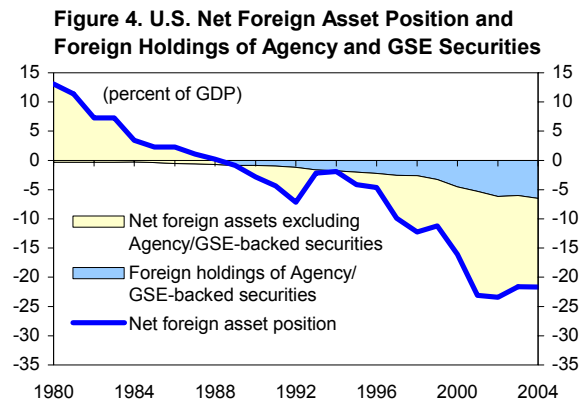


mortgage brokers, which also securitize mortgages and home equity loans with still riskier characteristics. For example, the declining affordability of housing has boosted demand for mortgages with strongly discounted initial rates and negative amortization options, allowing more expensive purchases for a given monthly payment.

6. ***These “exotic” mortgage products have begun to play a well-publicized role in recent years, especially in the condominium market.*** Their strong take-up during 2004/05 has prompted U.S. regulators to emphasize the need for banks to improve risk management procedures and maintain prudential exposure limits. Moreover, smaller banks appear to have become more revenue-dependent on private and commercial construction activity. This may not be as much of an issue in the “hottest” markets—where price increases are driven by the limited availability of land—but more in peripheral markets with significant construction of new housing.

## B. U.S. Housing Finance and Global Investors<sup>2</sup>

7. ***Mortgage-related financial products have been highly sought after by foreign investors.*** Such investors held close to \$1 trillion in GSE bonds and GSE-backed MBS by March 2006, an amount equivalent to about a third of the increase in U.S. net foreign debt since the 1980s (Figure 4). In other words, once holdings of equities and other investment instruments are netted out, a major part of the rising indebtedness of the United States reflects foreign investment inflows into the U.S. housing sector. To understand the strong foreign interest in these securities, it is instructive to first look at the attractiveness of the U.S. financial market for foreign investors in general.



Sources: Haver Analytics; *International Financial Statistics*; and Fund staff calculations.

8. ***Reflecting its size, market-based structure, and favorable economic conditions, the United States has the deepest and most liquid financial market in the world*** (e.g., Burger and Warnock, 2004). The amount of bonds denominated in U.S. dollars was \$22.5 trillion in March 2004, equal to more than 40 percent of outstanding global bond issues (Figure 5). Next to the large U.S. Treasury market, the U.S. private debt securities market is also the dominant corporate debt market in the world. As of 2003, the amount of outstanding corporate bonds issued in the United States amounted to \$6.5 trillion, or half the global market. The U.S. equity market enjoys a similarly dominant position, in part because of the

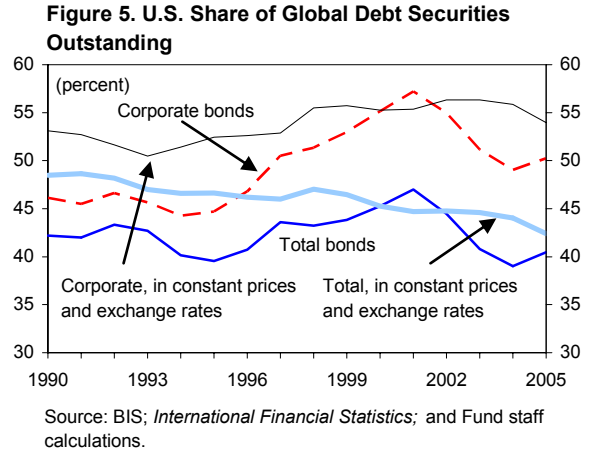
<sup>2</sup> This section partly draws on Schinasi and others (2001).



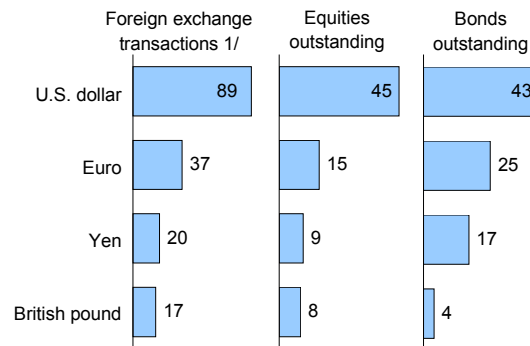
high degree of protection afforded to financial investors by the U.S. legal system (Kho and others, 2006).

9. ***Besides their size, U.S. securities markets have a number of structural advantages over other markets.*** For example, the U.S. market offers ample liquidity in benchmark issues covering the full range of maturities along the yield curve. This ranges from the very short-term—T-bills and the repo market—to the long-term, recently underpinned by the reintroduction of 30-year bonds. Many other countries have concentrated benchmark issuance on specific segments of the yield curve—largely 5-year or 10-year maturities—and short-term markets are not always as fully developed as the United States. The United States also has the largest stock of inflation-indexed bonds on issue. In addition, a large network of primary dealers and specialized financial institutions have created liquid markets in repos, futures, options, and, more recently, credit derivatives. By facilitating ways of splicing and combining risks associated with different securities, the market provides for efficient risk pricing mechanisms and allows investors to structure exposures closely in line with their desired risk-return tradeoffs.<sup>3</sup>

10. ***Moreover, the U.S. Treasury market has historically been highly internationalized, given the U.S. dollar's role as global reserve currency.*** Treasuries have been sought as instruments for hedging and collateral, and as the currency of choice for official foreign exchange reserves. As of mid-2004, the U.S. dollar has been involved in about 90 percent of the \$1.9 trillion worth of daily global foreign exchange transaction (Figure 6), and an estimated \$1.8 trillion of U.S. dollar holdings constitute two thirds of official foreign exchange reserves reported to the IMF. U.S. markets have also been an important source of



**Figure 6. Currency Denomination of Financial Products, 2004**

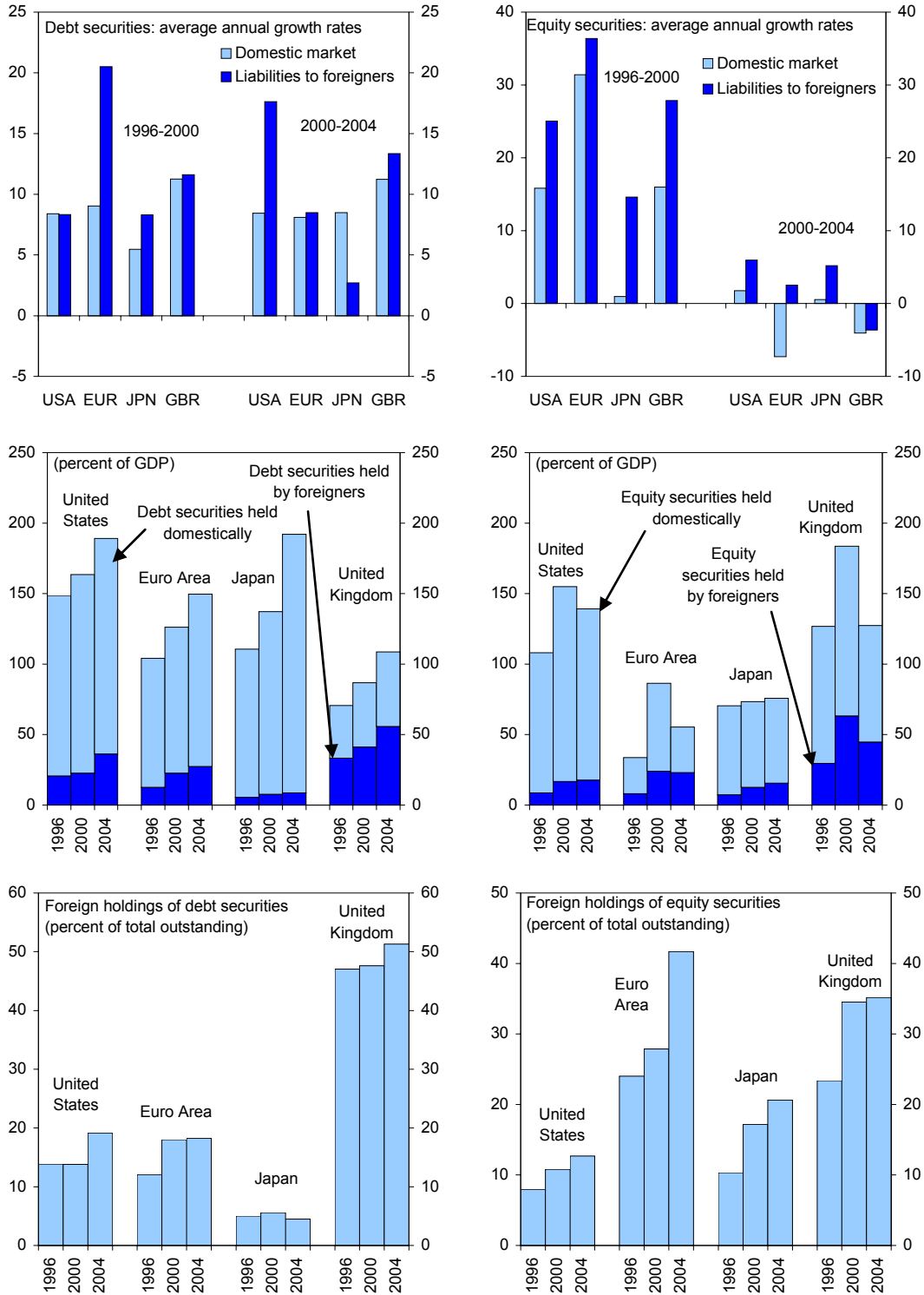


Source: McKinsey Global Institute, 2005.

1/ Because there are two currencies in a single foreign exchange transaction, the potential total is 200%; the share of other currencies comprise the remaining 37%.

<sup>3</sup> For example, the tranching of MBS backed by sub-prime mortgages and home equity loans allows risk-averse investors to pick up yield at limited exposure, while some of the substantive credit risk is borne by investors with a stronger risk appetite (e.g., hedge funds and speculative bond funds).

Figure 7. Foreign Participation in Major Financial Markets

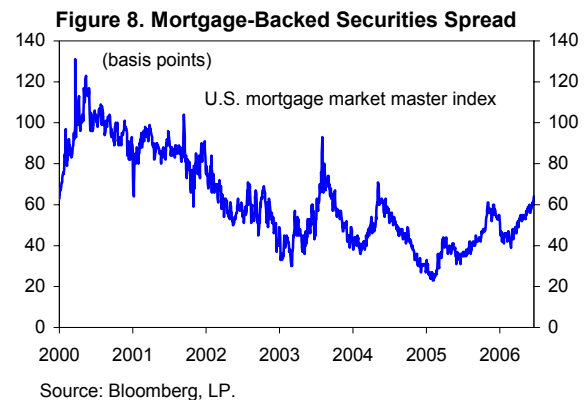


Sources: BIS; *International Financial Statistics*; and Fund staff calculations.

funds for firms from other countries—the US\$-Eurobond market is of similar size as the U.S. corporate bond market, both in outstandings and relative magnitude.

11. ***The attractiveness of U.S. markets for foreign investors is borne out by a comparative analysis with other large financial markets*** (Figure 7, previous page). Between 2000 and 2004, the amount of U.S. debt securities held by foreigners increased by close to 20 percent per year, compared to growth rates of around 8 percent or less of either domestic or international securities holdings of European and Japanese securities. Although the euro area had seen increases in foreign holdings in similar magnitude in the late 1990s, foreigners now account for 36 percent of GDP in holdings of U.S. debt securities, compared to only about 27 percent of GDP in the euro area. The larger size of the U.S. market explains why the overall market share held by foreigners is about equal, however.<sup>4</sup> On the equity side, growth in foreign investments in the United States has also been stronger in recent years, although on a much smaller scale than in the debt market.

12. ***With their 20-100 basis points spread over Treasury bonds in recent years, MBS issues have been one the key instruments purchased by foreign investors*** (Figure 8). Payment flows relating to the underlying mortgage portfolios are regarded as highly secure. Indeed, as the supply of U.S. Treasury bonds declined in the late 1990s, MBS were considered as a possible alternative for long-term benchmark bonds.



Although MBS are subject to duration risk—for example, a drop in interest rates tends to cause a surge in refinancing and prepayments—this can be hedged in interest rate derivatives markets. It is therefore not surprising that a large part of funds flowing into global fixed-income markets have found their way into the U.S. mortgage market. Indeed, reflecting their low risk rating, about one third of GSE-backed MBS held abroad are included in official foreign exchange reserves, while asset-liability management concerns have prompted global pension funds to invest in MBSs, fulfilling both a need for longer-term securities and stepped-up income flows.<sup>5</sup>

<sup>4</sup> Data on portfolio allocations suggest that foreign investors are not overweight U.S. assets, although the size of U.S. net foreign liabilities has become large compared to other countries even when factors such as the size and openness of the U.S. economy are taken account of (Swiston, 2005).

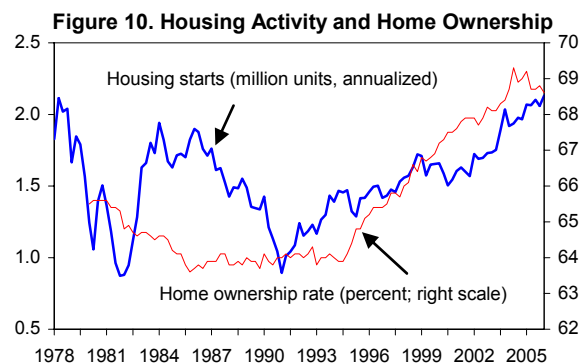
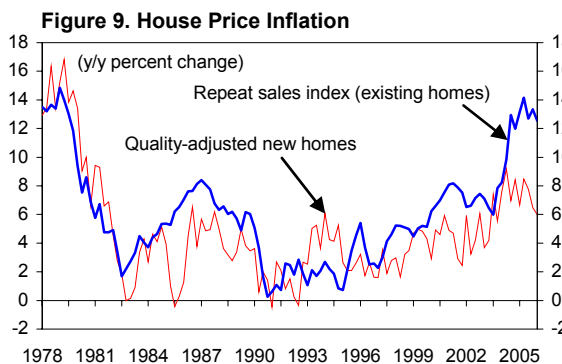
<sup>5</sup> Balakrishnan and Tulin (forthcoming) point out that foreign investors have not demanded a risk premium to invest in U.S. assets, as expectations of dollar depreciation were only partly being offset by growing interest differentials in favor of the United States.

13. *All this suggests that the U.S. financial system, and the mortgage market in particular, have evolved in a way conducive for tapping the increasing supply of funds provided by foreign investors.* U.S. markets had the infrastructure in place to intermediate large foreign inflows at a time when demographic and other factors created significant demand for housing loans, and U.S. financial institutions have also proved adept at creating instruments that catered to investors' different risk appetites. To some extent this has been matched by European covered bonds ("Pfandbriefe")—which have MBS features, except that the underlying loans remain on banks' balance sheets—that have also been high in demand. However, the market for covered bonds, measured by outstanding amounts, is only an estimated one tenth the size of the U.S. MBS market, and issuance has been sluggish owing to depressed conditions in the German housing sector.

### C. Has It Gone Too Far?

14. *Many observers are wondering whether foreign capital inflows into the U.S. housing market have kept interest rates artificially low, contributing to a housing bubble.* There is some evidence that long-term interest rates in the United States might have been higher in the absence of bond purchases by foreign investors (e.g., Warnock and Warnock, 2005). However, long-term interest rates, and by implication mortgage rates, were low throughout the industrialized world, and recent issues of the IMF's *World Economic Outlook* have identified a number of structural reasons for this phenomenon, including high corporate saving, low inflation expectations, and reduced financial market volatility. Nevertheless, the question needs to be asked whether risk and credit allocation mechanisms in the U.S. housing market have remained efficient in the face of abundant capital availability. This requires an examination of the current level of house prices.

15. *Are U.S. house prices overvalued?* Going through the third major cycle in 30 years, national house prices have on average risen by 7 percent per year since 1995—10 percent since 2000—accompanied by a strong surge in sales volumes (Figure 9). There is ample anecdotal evidence of overvalued property and speculative activities in some of the hottest local housing markets, including along the Pacific and Atlantic coast lines. Trends in other regions have been considerably less dynamic, however, and a number of factors indeed



supported an increase in prices in recent years (Muhleisen and Kaufman, 2003):

- Reflecting demographic and immigration trends, the home ownership rate has increased strongly and remains close to the record 69.4 percent reached in 2004 (Figure 10, previous page).
- The combination of strong disposable income growth, low interest rates, and large capital gains has provided a powerful boost to the financial situation of households. The housing affordability index has recently declined but remains near its long-term average.
- Price increases appear to reflect a growing demand for higher-quality housing in terms of size, features, and appliances. Moreover, house price inflation has been concentrated at the higher end of the real estate market.

### Box 1. U.S. House Price Estimates

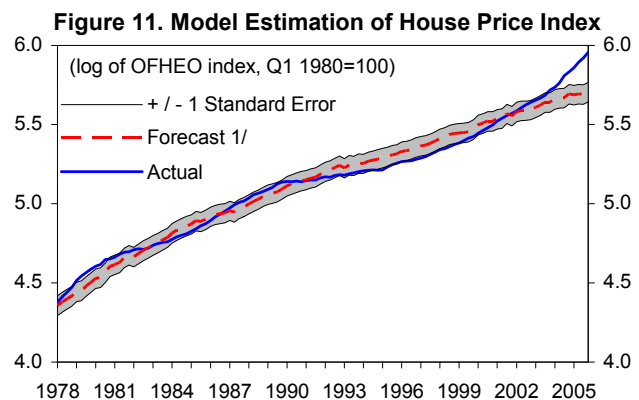
*A simplified version of the approach by Muhleisen and Kaufman (2003) is used to gauge the level of house prices relative to fundamentals.* The key variable is disposable income (per household), whereas the 30-year mortgage rate and the unemployment rate have no significance over the long term. The dependent variable is the OFHEO repeat price index. All variables are in logs.

Regression of House Price Index on Fundamentals

Period	1975Q1: 2005Q3	
	Coefficient	Probability
Constant	8.092719	0.0000
Disposable income per household	0.963217	0.0000
Mortgage rate	-0.031534	0.2409
Unemployment rate	0.030958	0.3661
Observations	123	
Adjusted R-squared	0.98162	

Sources: Bureau of Economic Analysis; Bureau of Labor Statistics; Office of Federal Housing Enterprise Oversight; and Fund staff calculations.

16. *Long-run price trends are most closely associated with household income, whereas the level of mortgage rates and the unemployment rate seem to affect mostly the short-term dynamics* (Box 1). This result is consistent with earlier findings, although the model has only been run only on a nation-wide basis for the purpose of this paper. The equation is relatively sensitive to sample periods and the type of house price index used, but the most robust specification indicates that national house prices were around 15-20 percent above a range consistent with fundamentals in 2005 (Figure 11).



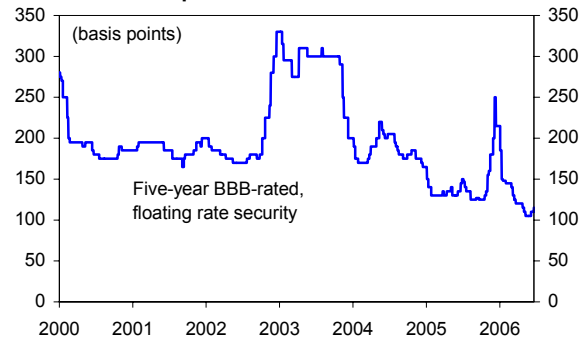
17. *With long-term interest rates rising, the housing market has entered into an adjustment phase.* The 30-year mortgage rate is back at a five-year high, mortgage applications have slowed, sales have dropped, and price increases appear to have retreated from last year's peaks. However, past experience suggests that aggregate house prices are much more likely to trade sideways than go through

a prolonged decline unless economic conditions deteriorate, causing sharp increases in unemployment. It is not clear to what extent such precedents provide guidance in a market that has seen considerable structural changes in recent years (see Chapter 5 of this volume). In particular, the rapid expansion of “exotic” mortgage products that may have increased the exposure of both borrowers and lenders to an economic downswing. On the other hand, some of these potentially negative effects could be offset by structural changes in favor of lower volatility that have been mentioned earlier in this chapter.

18. *The MBS market has shown few signs of concern about the slowing housing sector.* Given the rise in exotic mortgage products, many analysts have been concerned that a correction in the housing market could entail some financial losses on the part of real estate lenders and MBS holders. However, others have pointed out that the risks from exotic mortgages still appear limited, given their relatively recent appearance, relatively diversified ownership, and some signs of a return to more conservative lending practices in 2006 (Cagan, 2006).<sup>6</sup>

Indeed, risk spreads on securities backed by home equity loans, including those with higher risk tranches, do not indicate that financial markets are anticipating a significant increase in defaults on mortgage payments (Figure 12), even as spreads on other assets with higher risk characteristics have increased.

**Figure 12. Home Equity Loan Asset-Backed Securities Spread to LIBOR**



Source: J.P. Morgan Chase and Co.

## D. Conclusion

19. *This paper suggests that U.S. financial markets have been skilful in developing tools that have helped households exploit favorable global financing conditions to boost homeownership and acquire housing wealth.* This is likely to have contributed to a rising current account deficit, but indications are that credit and risk allocation mechanisms in the U.S. housing market have remained relatively efficient. This should provide comfort as the real estate market has entered what so far appears to be a cyclical downswing.

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<sup>6</sup> Exotic mortgages have only begun to spread as better data and more refined financial tools have become available to lenders, including complex behavioral models and sophisticated financial innovations that allow the tailoring of attendant risks to dedicated investor classes.

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## II. RECENT TRENDS IN LABOR SUPPLY AND DEMAND<sup>7</sup>

### A. Introduction

1. ***Cyclical developments in the U.S. labor market have been atypical in recent years.*** Aggregate employment and participation have tended to fall during a recession but quickly bounce back during recoveries (Figure 1). Despite a strong economic recovery since 2001, however, the bounce-back of labor markets failed to materialize, labor force participation has remained below its pre-recession level, and employment growth has been relatively sluggish.
2. ***The unusually low level of unemployment and participation rates raise questions on how much slack remains in the labor market.*** With the unemployment rate just a notch above 4½ percent but wide-spread wage pressures not in evidence, an accurate gauge of the extent of labor market “reserves” is crucial for policymakers.
3. ***This chapter reviews relevant findings of the recent academic literature.*** Particular attention is paid to the question whether the unusual behavior of the labor participation rate and employment growth reflects cyclical fluctuations or structural shifts with potential long-term implications.

### B. What Explains Low Labor Market Participation?

4. ***Current research suggests that both cyclical and structural influences are behind low participation rates since the 2000–01 recession.*** Aaronson and others (2006b) found that tight labor markets in the late 1990s contributed to a strong increase in labor market participation, and sharply deteriorating labor market conditions played a part in the decline through 2003. In addition, there is a substantial body of work suggesting the presence of a number of structural factors.

#### Demographic factors

5. ***Ongoing shifts in the age composition of the workforce tend to depress the aggregate participation rate.*** As labor market participation tends to be the highest for prime-age workers, and tapers off as workers get closer to retirement (Figure 2), a shift towards a larger share of mature workers may act as a drag on the aggregate participation rate.<sup>8</sup> With the leading edge of the baby boomers just two years away from retirement, the ranks of mature workers have been swelling rapidly in recent years, and demographic change may have become a significant driver of changes in aggregate labor supply behavior.

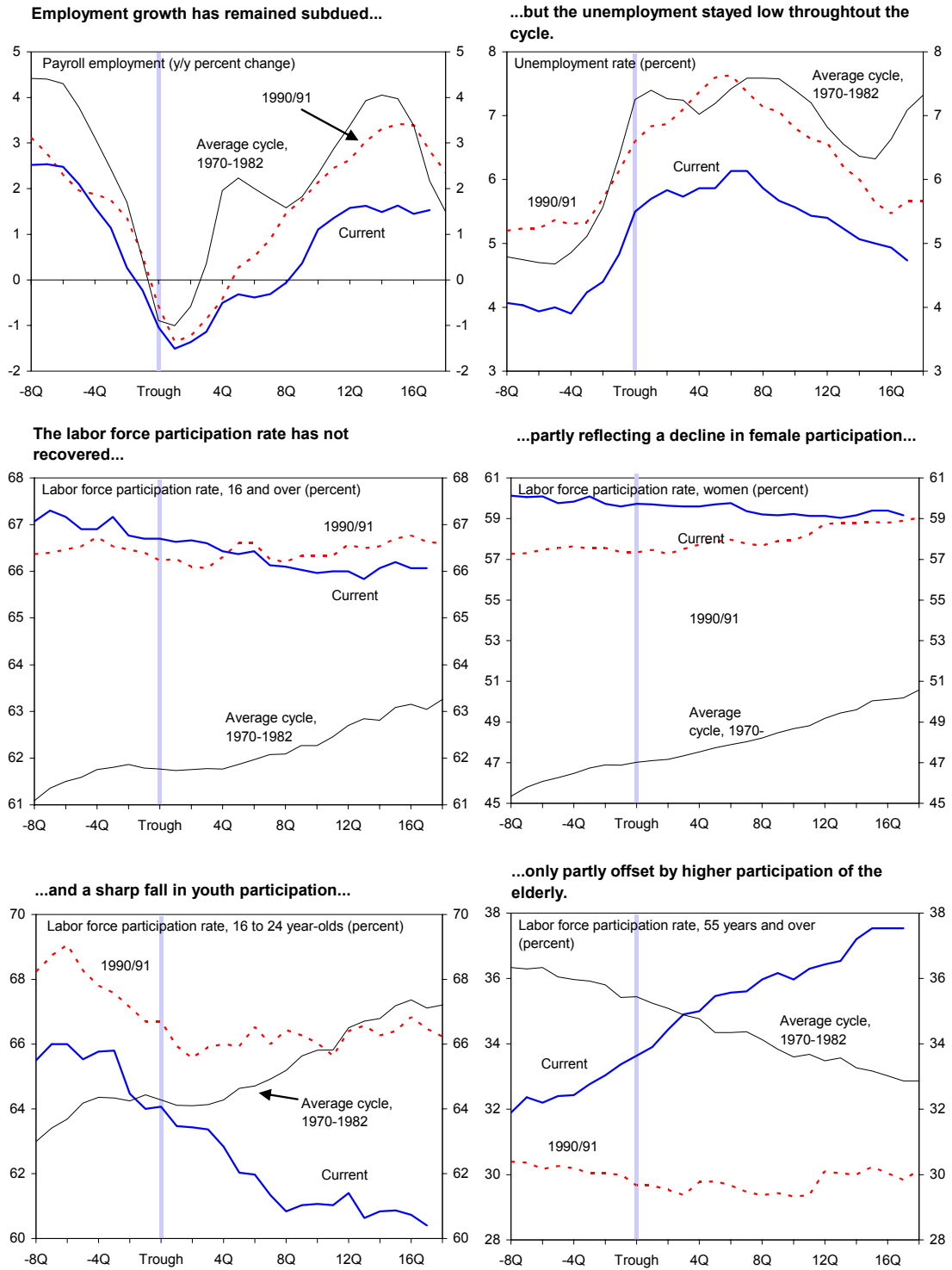
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<sup>7</sup> Prepared by Evridiki Tsounta.

<sup>8</sup> Of course, ongoing demographic change may also trigger longer working lives.

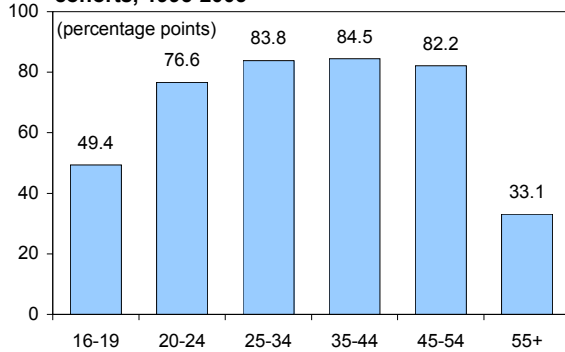


Figure 1. United States: Labor Market Indicators



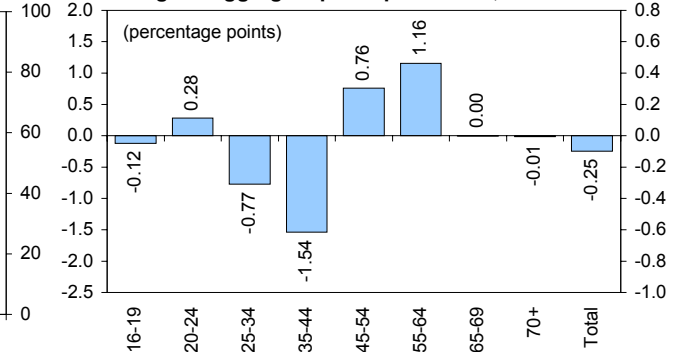
Sources: Haver Analytics; and Fund staff calculations.

**Figure 2. Average participation rates by age cohorts, 1995-2005**



Sources: Haver Analytics.

**Figure 3. Contribution of demographics to the change in aggregate participation rate, 2000-2005**

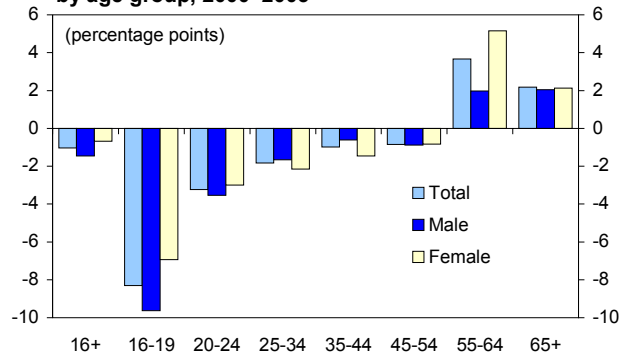


Sources: Bureau of Labor Statistics; and Fund staff calculations.

6. *However, demographic factors account for only about a quarter of the drop in the participation rate between 2000 and 2005.* Under the assumption that age and gender-specific participation rates had remained at their 2000 levels, the rise of the share of mature workers at the expense of prime age workers would have implied a decline in the aggregate participation rate (Figure 3)<sup>9</sup>. However, this demographic shift only accounts for ¼ percentage point of the 1.1 percentage point decline in the overall participation rate.

7. *The bulk of the decline in the aggregate participation rate appears to be related to weaker labor market participation of younger cohorts.* The youngest age groups experienced the sharpest drop, although participation has also fallen for prime-age workers, particularly women (Figure 4). Elderly women have remained significantly more active in the labor market compared to 2000, however, helping to raise the participation rate of older workers by 4 percentage points over the past 5 years.

**Figure 4. Change in labor force participation rate by age group, 2000–2005**



Source: Haver Analytics.

### Specific participation rates

8. *The almost double-digit drop in the teen participation rate explains close to half of the drop in the participation rate in recent years* (OECD, 2005). Unlike after previous recessions, the youth participation rate has continued to decline during the recent recovery.

<sup>9</sup> The estimates are based on a simple accounting procedure suggested by MacGregor and Mang (1996). The approach is based on the idea that “changes in the aggregate participation reflect changes in the participation rate of individual age-sex cohorts as well as changes in the importance of each of these cohorts in the distribution of the population” (Dugan and Robidoux, 1999).

Studies suggest that increasing school enrollment, as well as stronger competition in labor market segments where youth participate, may have played a role.

- ***Higher school enrollment is estimated to account for about ¼ of the decline in teen participation*** (Aaronson and others, 2006b; Coffin, 2004).<sup>10</sup> Increases in family wealth, as well as higher returns to schooling—both longer-term trends—were both identified as significant factors. In addition, Aaronson and others (2006a) note that a fall in tuition (net of grants and education tax benefits) and an increase in the number of community colleges lowered the cost of education and made college attendance more widely accessible over the last decade.
  - ***Stronger competition from other population groups may have increased the share of discouraged youth.*** For example, low-skilled women who entered the labor market following the implementation of the Temporary Assistance for Needy Families welfare reform may have competed for jobs available for young adults. Immigration of unskilled workers may also have worsened employment opportunities, particularly for less-educated young males (CBO, 2004a,b).<sup>11</sup> In addition, higher participation by older workers could have had an impact to the extent that employers have substituted inexperienced young with experienced mature workers.
9. ***Moreover, the long-term increase in female participation appears to have come to an end.*** Prior to the last recession, a slight trend decline in prime-age male participation—continued since 2001—had been offset by a trend increase in female labor participation. Indications are that the latter trend has now halted:
- ***Weaker labor market conditions only explain about a third of the fall in female participation between 2000 and 2004*** (Hotchkiss, 2005). Shifts in the demographic composition of the female labor force, including a greater share of Hispanic women, as well as the somewhat weaker labor market pull from education are found to have

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<sup>10</sup> Aaronson and others (2006a) find that about 1.6 percentage points of the 8 percentage point drop in teen participation between 2000–04 could be explained by a rise in school enrollment. The remaining was explained by lower participation rates among existing students (5.1 percentage points), and non-enrollees (1.4 percentage points). For 20–24 year-olds, the contributions were more evenly spread. Coffin (2004) finds that 40 percent of the decline in teen participation since the end of the recession is explained by increases in school enrollment, particularly in summer schools, and teen unemployment.

<sup>11</sup> Immigrant labor has been the largest source of growth in the total labor force, accounting for about half of its increase since the beginning of the 1990s (Camarota, 2004). Between 2000 and 2005, the number of less-educated adult immigrants in the labor force increased by 1.6 million. By comparison, unemployment among less educated adult natives increased by nearly 1 million, with an additional 1.5 million choosing to leave the labor force (Camarota, 2006). In addition, while the number of discouraged workers has declined over the past year, this decline has been limited to those aged above 25 years old (OECD, 2005), suggesting that most of the discouraged workers had been among the younger, less educated cohorts.

contributed. However, the bulk of the decline in the participation rate remains unexplained, suggesting a role for structural factors.

- ***The decline in female labor market participation has been concentrated among younger, highly educated, married women with young children*** (Bradbury and Katz, 2005). This suggests that changes in labor market preferences or other factors specific to that demographic group, may have been partly responsible. Rising incomes may also have allowed secondary earners in families with higher incomes to withdraw from the labor market.

10. ***The rise in labor participation rates of older workers is largely seen as a response to structural factors.*** Long-term trends such as rising longevity, better health, higher educational achievement, and higher female participation among the baby boomers have facilitated labor market participation by older workers.<sup>12</sup> In addition, ongoing health care cost increases, the weakening of company-based defined benefit pension plans, recent pensions scandals, and uncertainty regarding the Social Security system may have motivated workers to delay retirement.<sup>13</sup> By contrast, the effects of the unwinding IT bubble—which impacted retirement assets—are seen as moderate, given that the share of significantly affected individuals appears to have been relatively small (Coile and Levin, 2006) and the subsequent housing boom has mitigated any negative wealth effects.

### C. What Influenced Employment Growth?

11. ***Employment growth has been unusually weak during the current recovery.*** Non-farm payroll employment has grown by less than 2 percent since the cyclical trough in 2001, compared to 6 percent over a corresponding period in the early 1990s and around 12 percent on average in previous cycles. The weakness of employment has been most pronounced in manufacturing, but the service sector has also underperformed relative to previous upturns.

12. ***The lack of job growth is often attributed to the increased pace of structural change in the economy, but the empirical evidence is inconclusive.*** Structural change is characterized by permanent destruction of jobs in declining industries and creation of new jobs in emerging industries. Given the need for labor markets to adjust, structural change could have imposed a temporary drag on employment growth in recent years. However, the evidence for this hypothesis is mixed:

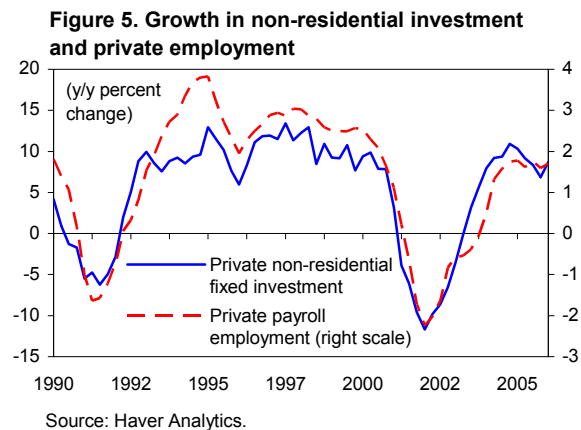
- On the one hand, temporary layoffs have played a relatively small role in the latest cycle, consistent with the view that structural factors have grown in importance

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<sup>12</sup> For an overview of the factors affecting elderly participation, see Burtless (1999) and Burtless and Quinn (2001).

<sup>13</sup> Gruber and Madrian (1995) suggest that the introduction of a universal health care system in the United States would increase the rate of early retirement.

- (Schweitzer, 2004). In addition, the share of industries experiencing either net job gains or job losses during *both* phases of the last economic cycle has increased from previous cycles (Groshen and Potter, 2003). This could indicate that the share of declining or emerging industries in the economy is growing, consistent with intensifying structural change.
- On the other hand, data for job creation and job losses across industries do not support the hypothesis of growing inter-industry job reallocation in recent years (Faberman, 2004).
13. ***While outsourcing has grown considerably in recent years, the evidence supporting a significant impact on employment growth also remains limited:***
- There are indications that industries and occupations commonly associated with offshoring have experienced above-average job declines since 2001 (GAO, 2004). However, negative employment effects associated with outsourcing vanish at less disaggregated industry levels as higher employment growth in other industries provides an offset (Amiti and Wei, 2005).
  - Consequently, job growth at the sectoral level appears to be only weakly affected (Amiti and Wei, 2004).<sup>14</sup> This is confirmed by statistics suggesting that the scale of outsourcing remains small (Schultze, 2004). For example, layoffs due to overseas relocation represented only about 1.5 percent of layoffs in 2004.<sup>15</sup>
  - Looking at the broader impact of globalization, Faberman (2004) finds that trends in job destruction and creation across industries are independent of their exposure to international trade.
  - An earlier analysis found that increased foreign trade contribute to changes in relative wages, but its effect on aggregate employment remains ambiguous (Swagel and Slaughter, 1997).
14. ***The close correlation between employment and investment growth suggests that the sluggish recovery of the labor market may be related to unusually subdued investment*** (Figure 5). In the aftermath



<sup>14</sup> Amiti and Wei (2004, 2005) only consider data for an earlier period (up to 2000).

<sup>15</sup> Based on the Department of Labor's Mass Layoff Survey that covers establishments with at least 50 employees.

uncertainties, firms appear to have become cautious both in their capital spending and hiring decisions. Therefore, the finding that many industries reduced employment levels both during and after the recession may less reflect structural factors than large adjustment needs in industries where capital spending and employment growth had been previously overambitious (Faberman, 2004; Cooper, 2006).

#### D. Conclusions

15. ***A number of structural factors are likely to restrain labor supply growth in the United States.*** Notwithstanding higher participation rates among the elderly, population ageing is likely to have slightly negative impact over the medium term, with the Bureau of Labor Statistics projecting to a fall in the overall participation rate of ½-1 percentage point. Youth participation could continue on its declining trend if school enrollment were to rise, reflecting likely increases in returns to schooling. Similarly, the trend rise in female labor participation may have come to an end, particularly as higher wealth and family incomes facilitate withdrawals from the labor force.

16. ***There is little evidence for structural factors behind the slow rate of employment growth in recent years, however.*** By contrast, there is some support for the hypothesis that low labor demand may be related to the unwinding of an investment and employment boom in the late 1990s. With the labor market expected to tighten once this adjustment has run its course, wage pressures could be expected to increase.

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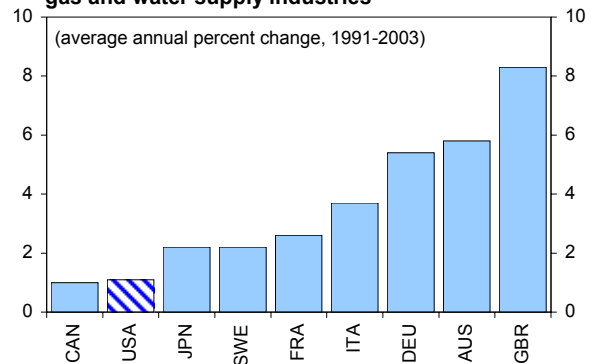
### III. CHALLENGES FACING THE U.S. ELECTRICITY SECTOR<sup>16</sup>

#### A. Introduction

1. ***Recent bottlenecks in electricity distribution have highlighted the challenges facing the U.S. electricity sector.***<sup>17</sup> As shown by two major blackouts in California and the Northeast in recent years, interruptions in the supply of electricity can have a significant impact on economic activity. For example, the U.S. Department of Energy (DOE) estimated that the cost of the blackout of August 14, 2003 in the Northeast amounted to \$4-10 billion (DOE, 2004, 2005). With electricity demand expected to increase by 50 percent over the next 25 years (White House, 2006), the need to maintain a reliable and efficient electricity sector is evident.

2. ***International comparisons suggest that there is room for improving the performance of the U.S. electricity sector.*** The United States ranks nineteenth in quality performance surveys among OECD countries (OECD, 2005), and productivity growth in utilities also appears to have lagged most other large industrial countries (Figure 1). Reform proposals for the electricity sector tend to focus on improving the reliability of the transmission and distribution infrastructure, including by more integration across state lines and with Canada (OECD 2004, 2005; CEA, 2004).<sup>18</sup> In addition, it has been proposed that greater competition in the distribution sector could enhance efficiency and consumer choice, as occurred for large users following deregulation in the wholesale electrical sector (OECD, 2004).

**Figure 1. Labor productivity growth in electricity, gas and water supply industries**



Source: OECD, 2004, *Canada Country Survey*.

#### B. Evolution of the Electricity Sector

3. ***The U.S. electricity sector has long been dominated by vertically integrated utilities that own their generation, transmission, and distribution facilities.*** Most utilities entered into interconnection and coordination arrangements with neighboring utilities, and the

<sup>16</sup> Prepared by Evridiki Tsounta.

<sup>17</sup> In a 2002 study, the DOE (2002) noted that “there is growing evidence that the U.S. transmission system is under stress.”

<sup>18</sup> According to the North American Electric Reliability Council (Owens, 2005), transmission transactions that could not be completed due to congestion on transmission lines increased almost eight-fold to more than 2,300 in 2004 compared with 300 uncompleted transactions in 1998.

wholesale market developed around long-term contracts for the sale of bundled power to large customers such as municipalities and cooperatives. Geographical segmentation was significant, however, with each utility covering a defined and usually small service area.

4. ***The energy crises in the 1970s and 1980s triggered calls for more efficient electricity generation and distribution.*** Between 1970 and 1985, average residential electricity prices more than tripled in nominal terms, and prices for industrial customers more than quadrupled. Responding also to energy shortages in the wake of the first oil shock, the 1978 Public Utility Regulatory Policies Act (PURPA) facilitated the build-up of cogeneration facilities and laid the groundwork for competitive wholesale power markets.<sup>19</sup> Subsequently, the 1992 Energy Policy Act exempted certain wholesale generators from restrictions of the 1935 Public Utility Holding Company Act (PUHCA) that limited holding companies to activities related to their gas or electric businesses and restricted expanding their geographic scope (Hunt, 2001).

5. ***Competition in the wholesale market increased further beginning in 1996 with the unbundling of electricity services.*** The Federal Energy Regulatory Commission's Order No.888 (FERC, 1996) required all public utilities that own, control or operate facilities used for transmitting electricity in interstate commerce to provide "open access" to their transmission facilities on a non-discriminatory basis.<sup>20</sup> As a result, market entry increased significantly. Independent system operators (ISOs) and Regional Transmission Organizations (RTOs) were established, and now operate about 70 percent of the transmission system. This increased trade in bulk power and helped establish efficient regional wholesale markets.

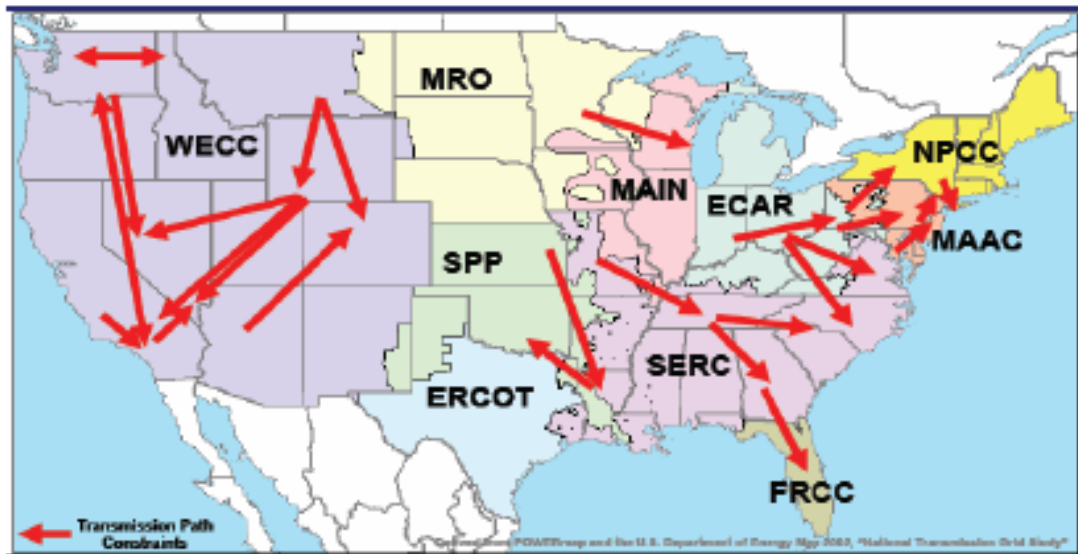
6. ***However, shortcomings of the transmission infrastructure limit benefits from competition in the wholesale generation market.*** Generation capacity is dispersed widely across the country, and transmission infrastructure is not sufficient to ensure competition in power generation or to keep pace with the growth in electricity demand in recent decades (Owens, 2005). Figure 2 shows the main interregional transmission bottlenecks that were pointed out by a Department of Energy study (DOE, 2002).

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<sup>19</sup> Cogeneration facilities produce two types of energy simultaneously from one source in such a way that both are usable rather than one being treated as waste energy. Before PURPA, only utilities could own and operate electric generating plants. PURPA required utilities to buy power from independent companies that could produce power at a lower cost than the utilities' generating plants, encouraging the creation of natural gas-fired cogeneration plants, where steam is produced along with electricity (UCSUSA, 2006).

<sup>20</sup> Order No. 888 found that unduly discriminatory and anticompetitive practices existed in the electric industry, and that transmission-owning public utilities had discriminated against others seeking transmission access. The Order requires utilities to (i) publish non-discriminatory transmission service rate schedules; and (ii) participate in a computer-based information system providing real-time data about transmission capacity, prices and other information. The nondiscrimination provisions prohibit transmission providers from supplying different transmission services to different customers and requires that they charge users of the same grid the same price.

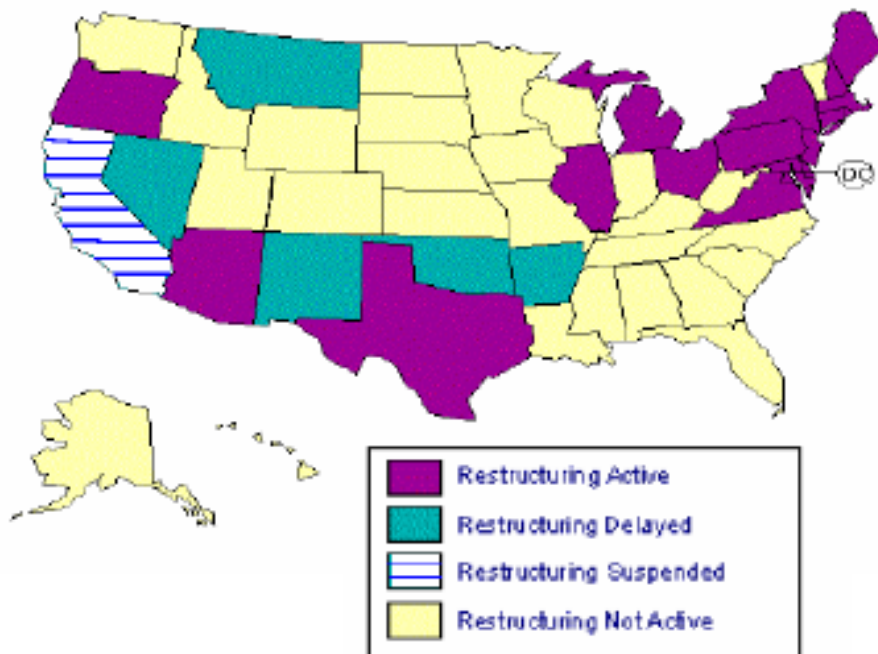
Figure 2. Transmission Path Constraints in the United States<sup>1/</sup>



Source: Delivered from Powermap and DOE (2002).

1/ The map indicates the various electric reliability councils.

Figure 3. Status of State Electric Industry Restructuring Activity  
As of February, 2003



Source: EIA (2003).

7. ***Current projections suggest that the shortfall in transmission infrastructure will continue.*** Over the next 6-7 years, high voltage transmission capacity is expected to increase by only 6 percent (in line-miles), while electricity demand and generation capacity is projected to increase by 20 percent (DOE, 2002). The DOE estimated that relieving transmission bottlenecks in four U.S. regions (including California, PJM, New York, and New England) alone could save consumers about \$500 million annually.<sup>21</sup>

### C. Current Policy and Remaining Issues

8. ***Restructuring and deregulation in electricity markets has decelerated following the energy crisis in California in 2000-01 and the collapse of Enron.***<sup>22</sup> The U.S. Energy Information Administration (EIA) describes restructuring as being on hold outside the Northeast, Texas, Oregon, and Arizona (Figure 3).

9. ***Electricity sector reform has been found to be more of a challenge in the United States than in other countries.*** Comparing the United States to the U.K., New Zealand, Australia and Spain, the OECD (2004) identified two factors likely to complicate structural reforms:

- ***State responsibility for electricity regulation.*** Compared to countries with more centralized authorities, the preponderance of state-specific regulations may have complicated the formulation of a national electricity strategy.
- ***Slow untangling of vertically integrated local monopolies.*** Other countries have moved faster to separate market segments that are naturally competitive (generation and marketing) from those that constitute natural monopolies (transmission and distribution). This may have been more conducive to subsequent deregulation, and initial public ownership of utilities may also have facilitated reforms.

10. ***The 2005 Energy Bill eased some of these constraints.*** Among other provisions, the Bill removed a number of obstacles to electricity investments, such as reducing the tax depreciation recovery period of transmission assets by 5 years to 15 years. It also widened the scope of open access requirements for transmission lines; made electric reliability standards mandatory; gave federal officials the authority to select sites for new power lines; and expedited the process for selecting sites on both federal and private lands. These measures aim to improve the operation and reliability of electric transmission networks, promote investment, and enhance transparency in the electricity sector (U.S. House of Representatives, 2005).

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<sup>21</sup> PJM includes the Pennsylvania, New Jersey and Maryland Interconnection.

11. ***While these steps are useful, there remains scope for further reforms.*** As noted by the U.S. Department of Energy (DOE, 2003), increasing regional integration and uniformity of rules could facilitate infrastructure investment and could result in substantial net savings to consumers. In addition, the DOE identified considerable room for increasing competition in the retail electricity sector. International experience (OECD, 2004) suggests that the retail market for services to larger customers should be liberalized first, given that the potential gains tend to be more significant than for households or small businesses, at least in the short term. Removing favorable tax and subsidy treatments of public utilities and privatization of government-owned assets could also help increase transparency and foster competition.

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<sup>22</sup> Problems in California's electricity market were often quoted as a prime example for failed retail competition; Enron was involved in restructuring in most states that introduced competition (OECD, 2004).

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#### IV. RECENT OIL PRICE DEVELOPMENTS AND THE PERFORMANCE OF THE U.S. ECONOMY<sup>23</sup>

1. ***The substantial rise in crude oil prices since the beginning of 2003 has raised concerns about the risks to U.S. growth and inflation.*** These stem, in part, from the fact that the oil price shocks of 1973, 1981, and 1991 were all followed by recessions. Since the United States is a net importer of crude oil, higher crude oil prices act like an excise tax on domestic consumers, reducing disposable income available for non-fuel consumption with no offsetting benefits for domestic producers. For example, given the level of crude oil imports by the U.S. in 2005, consumers paid an effective “tax” of about 0.6 percent of GDP in 2005.<sup>24</sup> With respect to inflation, crude oil price increases also add directly to headline inflation, potentially raising the need for tighter monetary policy to ward off any second round effects on core inflation.

2. ***The current oil price shock, however, appears to have had a limited impact on U.S. growth and inflation.*** Existing estimates of the relationship between U.S. economic growth and oil prices suggest a cumulative decline in annual GDP growth somewhere between 2 to 4 percentage points for the rise in crude oil prices since 2003 (e.g., Jones and others, 2004). However, U.S. output during 2004–05 was close to potential, while projected growth for 2006 remains healthy at 3.4 percent—a marginal decline compared with the 3.5 and 4.2 percent growth registered in 2005 and 2004 respectively.

##### A. Recent Developments in Crude Oil and Primary Commodity Markets

3. ***The global price of crude oil, as measured by the IMF average spot price, has more than doubled since 2003*** (Figure 1). This increase was largely unexpected, reflecting, for the most part, an unprecedented surge in global crude oil consumption owing to robust global growth.<sup>25</sup> Supply constraints also played a role, as evidenced by numerous geo-political tensions that threatened crude oil supplies at the same time that spare extraction capacity of Organization of Petroleum Exporting Countries (OPEC)—the swing producer in the global crude oil market—declined to unprecedented lows (IMF, 2005).

4. ***In contrast to previous price shocks, long-dated crude oil futures (i.e., market expectations for crude oil prices out to 2012) have also risen substantially since 2003.***

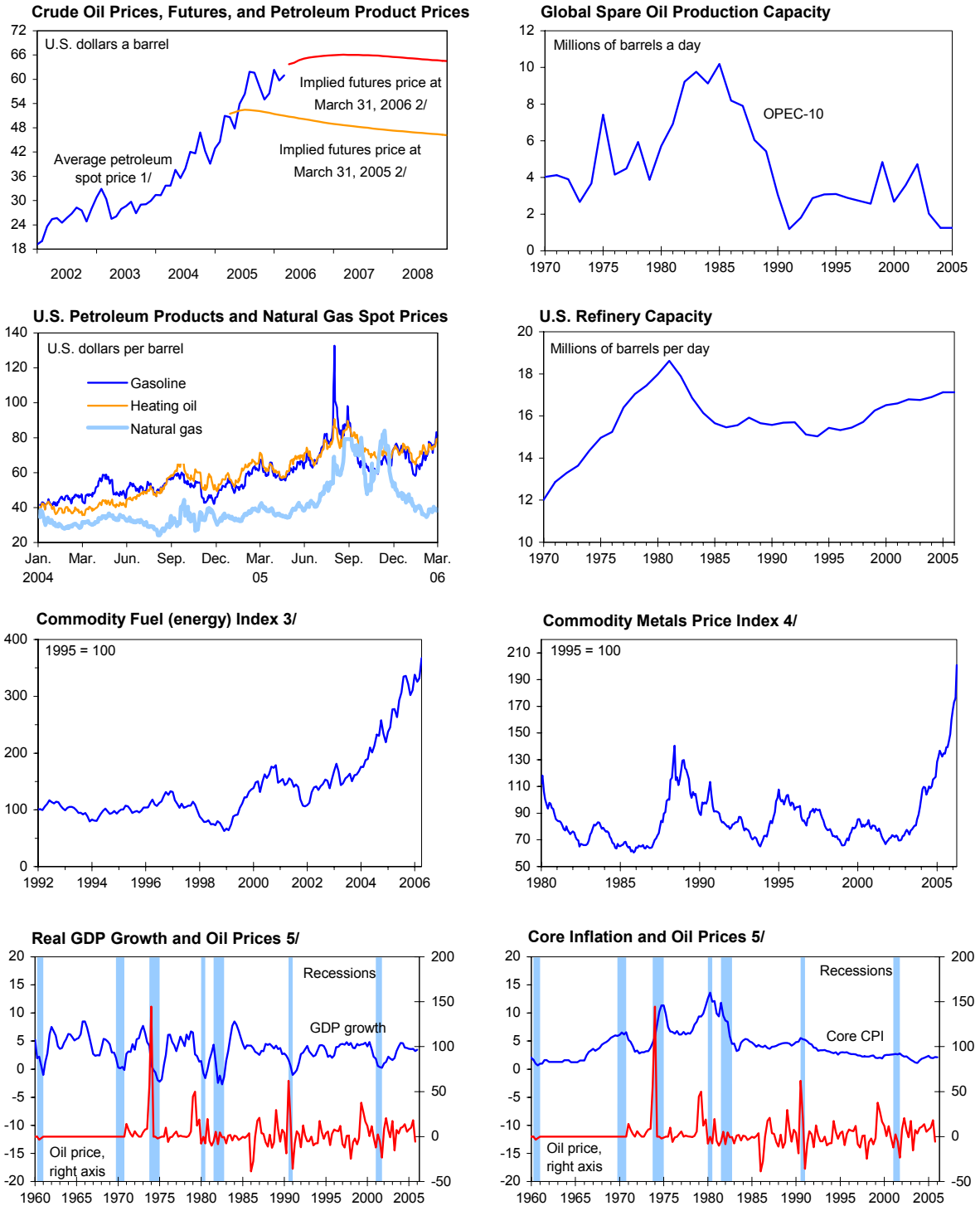
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<sup>23</sup> Prepared by Sam Ouliaris. This note has benefited from comments by Ravi Balakrishnan, Kornélia Krajnyák, and Martin Mühleisen.

<sup>24</sup> The actual first-round impact is likely to be moderated by rising U.S. exports to oil exporting nations.

<sup>25</sup> Early 2003 future curves for crude oil, which extended to 2008, failed to predict subsequent price increases. Also, the surge in global crude oil consumption was particularly evident in 2004, stemming from growth in the United States, China, and India.

**Figure 1. Oil Market Developments**



Sources: Energy Information Agency; Department of Energy; *World Economic Outlook*, April, 2006; and Fund staff calculations.

1/ Average unweighted petroleum spot price of West Texas Intermediate, U.K.Brent, and Dubai Fateh crude.

2/ Five-day weighted average of NYMEX Light Sweet Crude, IPE Dated Brent, and implied Dubai Fateh.

3/ Includes crude oil (petroleum), natural gas, and coal price indices.

4/ Includes copper, aluminum, iron ore, tin, nickel, zinc, lead, and uranium price indices.

5/ Annual growth rates. Crude oil corresponds to simple average of three spot prices: Dated Brent, West Texas Intermediate, and the Dubai Fateh.



Perhaps more importantly, the long-end of the curve has remained at elevated levels since then, suggesting that the increase in crude oil prices has a sizable permanent component. If the current crude oil future price curve is any indication, the price of crude oil is projected to remain above US\$65 per barrel at least until 2011, reflecting expectations of steady global oil demand growth, modest increases in crude oil production capacity, and uncertainty from geo-political risks.<sup>26</sup>

5. ***The rise in crude oil prices has led to substantial increases in petroleum product prices in the United States, notably in the price of gasoline.*** The increase in gasoline prices has been exacerbated by high refinery utilization rates and structural rigidities in the U.S. refinery sector that reduce its ability to respond to short-run market disturbances.<sup>27</sup> As a result, U.S. gasoline prices have become more susceptible to shifts in the supply-demand balance—as the aftermath of Hurricane Katrina clearly demonstrated. Hurricane Katrina shut-in almost 25 percent of U.S. crude oil production and natural gas from the Gulf of Mexico, and reduced refinery capacity by 10–15 percent for an extended period.

6. ***The substantial rise in crude oil prices has also coincided with a generalized increase in the prices of other primary commodities.*** The IMF index of commodity prices has increased by approximately 110 percent since January 2003, while its energy component, which tracks crude oil, natural gas, and coal prices, has increased by approximately 140 percent. Generalized movements in primary commodity prices may have implications for future U.S. inflation—energy commodities, for example, account for roughly 5 percent of the U.S. consumer price index, while goods excluding food and energy account for approximately 22 percent.

## B. Do Rising Oil Prices Still Matter?

7. ***The economic impact of the rise in crude oil prices in terms of lower output and higher inflation since 2003 appears to have been quite moderate so far.*** Indeed, the U.S. economy has moved closer to potential since 2003 and core inflation has been subdued. A number of explanations have been offered for the benign impact, including:

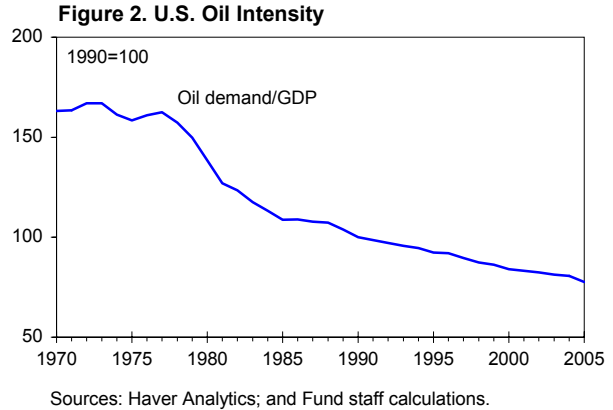
- ***The first-round effect of higher oil prices on GDP has fallen relative to the 1970s.*** Two reasons can be offered for this outcome. First, U.S. oil intensity—as measured by the oil consumption/GDP ratio—is now substantially lower than in the 1970s, in part owing to the energy conservation-inducing effects of higher real oil prices in the

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<sup>26</sup> It is well-documented, however, that crude oil futures price curves are poor predictors of future spot prices (e.g., IMF, 2005, pp. 64–68).

<sup>27</sup> For example, recent efforts to replace the Methyl tertiary butyl ether (MTBE) additive in gasoline with ethanol have been hampered by high refinery utilization rates in the United States, raising gasoline prices relative to the underlying price of crude oil.

1970s and early 1980s (Figure 2). The lower oil intensity also reflects the changing structure of U.S. industry—namely a declining share of manufacturing and a growing share of less energy intensive services. Second, despite the significant increase in nominal prices since 2003, real oil prices remain below those observed in the 1970s.



- A significant component of the current increase in crude oil prices reflects the robust growth in the world economy rather than an exogenous price shock.*** By contrast, the decline in OPEC output in the 1970s was a classic “supply shock” increasing the cost of production without raising real output. Since 2003, however, crude oil prices have risen *despite* substantial *increases* in global crude oil output, reflecting OPEC’s accommodative stance toward the growth in crude oil consumption. It follows that a significant proportion of the first-round effects of the higher oil prices since 2003 should be assigned to the original stimuli (i.e., an exogenous shock or structural break) that initiated the growth in the global economy—rather than oil price movements themselves.
8. ***Other factors may have indirectly contributed to the benign impact of the higher crude oil prices, including:***
- Reduced pass-through of higher crude oil prices to consumers.*** Higher labor productivity combined with low real wage growth has improved corporate profitability in the United States, possibly providing a buffer for producers to absorb the current oil price shock. At the same time, greater competition in the manufacturing sector—reflecting greater imports from low-cost producers such as China—have reduced manufacturers’ ability to pass on higher crude oil prices to consumers.
  - Improved monetary policy credibility.*** Notwithstanding higher crude oil prices, including higher long-dated futures prices, inflation expectations appear largely in check, core inflation remains subdued, and follow-on wage demands are not, as yet, evident—in contrast to the 1970s, when accommodative monetary policy may have contributed to a oil-induced wage-price spiral.
9. ***Looking forward, however, many of the factors offsetting the negative impact of higher crude oil prices could wane.*** With the output gap closing in the United States, latent price pressures from other primary commodities may eventually appear. In particular:

- Despite recent additions to overall capacity, OPEC’s spare capacity—in essence, the world’s strategic petroleum reserve—remains close to its historical lows, increasing the likelihood of future supply shortages. As such, crude oil supply shocks—actual or perceived—could play a greater role in future movements in the price of crude oil, thereby raising the ‘exogenous’ component of such movements.
- If crude oil prices remain high, consumers will likely revise down their expectations regarding the size of the “temporary component” of the current oil price shock. This would likely reduce their willingness to offset future movements in oil prices, leading to greater pass-through to headline inflation and higher wage demands. Upward pressure on headline inflation could necessitate further increases in short-term interest rates, with potentially adverse effects on the housing market and consumption.
- As noted above, the rise in crude oil prices has been associated with a generalized increase in primary commodity prices—energy and non-fuel—since 2002, and latent pressures for higher prices may remain. In a staggered price setting for wages and energy contracts, pressures for higher prices might well remain, especially if suppliers are in the process of revising their expectations for commodity prices.

### C. Policy Implications

10. *U.S. energy policy has aimed at reducing the security-related and macroeconomic risks associated with high crude oil imports and moderating the environmental consequences of the energy intensity of the U.S. economy* (Prust and Simard 2004).

However, U.S. policy initiatives have generally downplayed the role of energy taxation to reduce the demand for energy products. The focus, instead, has been on incentives toward boosting domestic energy supply and innovation to increase the efficiency of energy use.

11. *Declining U.S. energy intensity has moderated the impact of higher crude oil prices on growth and inflation, and further declines could be encouraged through appropriate policy measures that reduce the demand for energy.* If crude oil and gasoline prices remain at today’s elevated levels, past experience suggests that market participants will eventually switch to cheaper sources of energy, though the adjustment process may be long. The speed of the adjustment depends not only on relative prices, but also on the viability of alternative technologies and the extent to which market participants expect prices to remain permanently higher—the latter playing an especially important role. Increasing taxes on energy products if and when prices fall—notably gasoline taxes, which are presently low by international standards (Figure 3)—could help the process and encourage appropriate responses from consumers. While taxes could reduce demand in a cost-effective way (CBO, 2002), more stringent fuel-efficiency standards for cars and light trucks, through an incremental fix, could

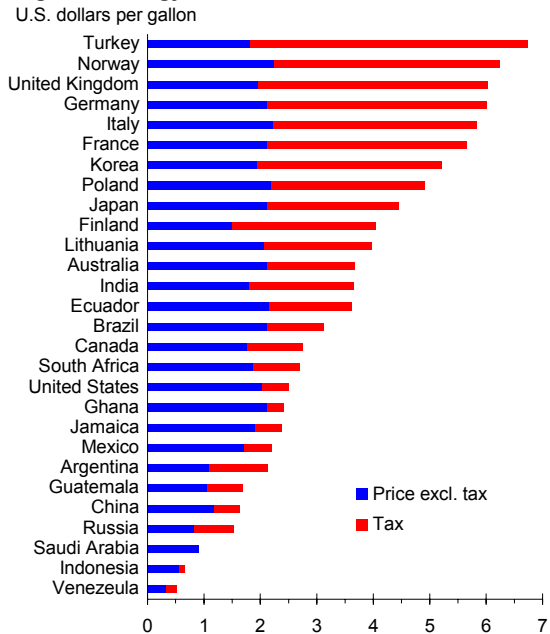
also be helpful to limit the growth in gasoline consumption.<sup>28</sup> The Administration could also expand incentives for buying fuel efficient cars—the existing tax credit for hybrid cars is due to expire after automakers have sold 600,000 hybrid vehicles.

12. *Given the high utilization rates in the refinery sector and recent sensitivity of gasoline prices to short-run disruptions to refinery capacity, additions to refinery capacity in the United States are being considered.* Deregulation and low profits have combined to push the industry into consolidation and modernization, reducing overall refinery capacity to 17 million barrels per day by 2005 (compared to 19 billion barrels per day in 1981). However, trend growth in gasoline consumption has pushed refinery utilization rates to historical highs. Moreover, increasingly challenging fuel specifications—including the methyl tertiary butyl ether (MTBE) ban in several states—have added to the complexities of refining and distribution across state boundaries, preventing cross-boarder movements in gasoline supplies. To be sure, with returns to refining substantially above historical levels and future prospects sound, the market could easily be left to resolve the refinery shortage. However, with “time-to-completion” lags of between 5–7 years and tight federal regulations governing refineries additions and expansion, the Administration could streamline the approval process, and remove any obstacles that unnecessarily lengthen construction times. Acceptance of proposals for the construction of refineries could be facilitated by efforts to promote more efficient refinery technologies.

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**Figure 3. Energy Prices and Taxes**



Source: *World Economic Outlook*, April, 2006.

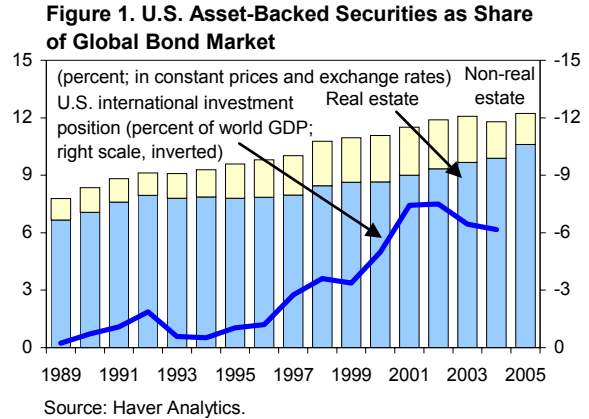
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## V. U.S. BANKING: FINANCIAL INNOVATION AND SYSTEMIC RISK<sup>29</sup>

1. ***The U.S. banking system remains highly innovative.*** Following computerization and consolidation in the 1990s, banks have become highly adept at isolating and allocating the various risks associated with bonds, mortgage-backed securities (MBS), and other financial products. This has contributed to the securitization of increasingly higher-risk assets, while facilitating the application of bond portfolio management techniques to mortgage books, increasing asset price discrimination, and helping to attract foreign capital. As described in Chapter 1 of this volume, these techniques have also contributed to the growing share of U.S. MBSs in the global bond market (Figure 1).



2. ***As complexity has mounted, so too have surveillance challenges.*** With banks relying increasingly on hedge funds for liquidity and trading diversity in a broad range of markets, regulators are no longer able to fully track risk on a system-wide basis, but are instead focusing more intensely on a subset of systemically important institutions. These include the “big five” investment banking groups as well as large bank holding companies (BHCs). For the purpose of this paper, the 20 largest BHCs, holding assets of \$7.4 trillion (58 percent of GDP) at end-September 2005, are referred to as “large complex banking groups” (LCBGs).

3. ***This paper analyzes recent U.S. banking developments, with a particular focus on LCBGs.*** The analysis is based on a review of accounting and equity market data, which are combined in a Black–Scholes–Merton “distance to default” (DD) indicator. This indicator is based on market measures of a firm’s profitability and balance sheet structure. The DD varies positively with returns on assets and capitalization and negatively with the volatility of assets, and its level can be mapped into a proxy measure of probability of insolvency. Thus, any increase in DD indicates improved financial soundness—reflected in a lower probability of insolvency—resulting from higher expected profitability, better capitalization, lower asset volatility, or a combination of these factors.<sup>30</sup>

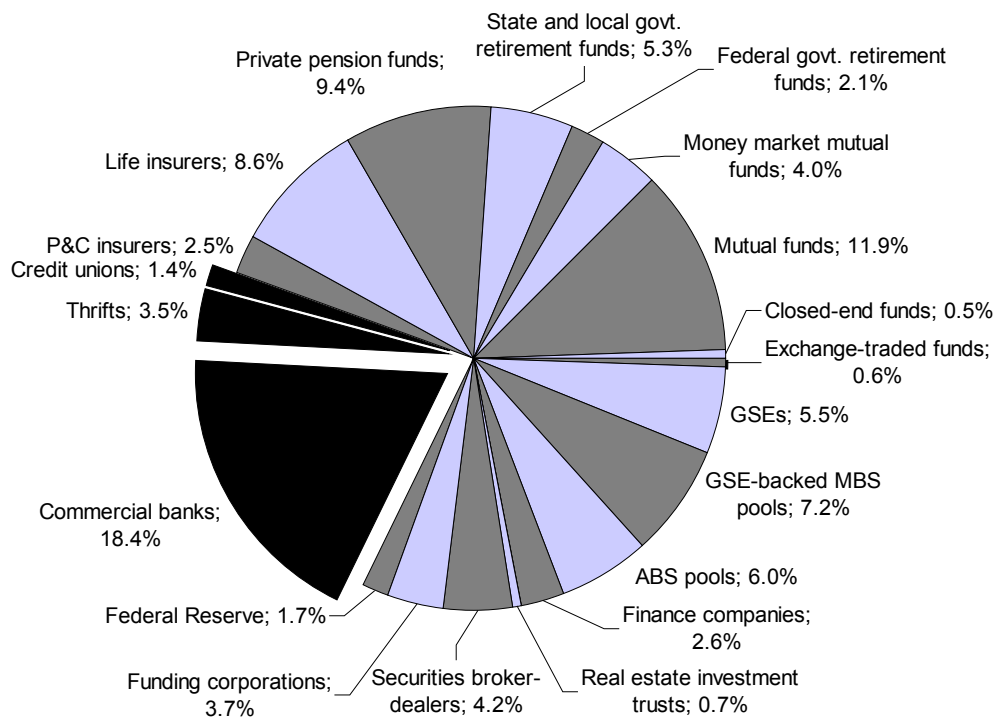
<sup>29</sup> Prepared by Ashok Vir Bhatia (MFD). Special thanks to Gianni De Nicoló (RES) for guidance and Marianne El-Khoury (MFD) for research assistance.

<sup>30</sup> For methodology, see De Nicoló and others (2004). DDs are calculated through end-2005, and so do not capture the market turbulence in mid-2006.

### A. Innovation in U.S. Banking

4. *Depository institutions are the fulcrum of the U.S. financial system, although they only account for a modest share of market assets* (Figure 2). In addition to traditional deposit-taking and lending activities, the banking system is engaged in more complex trading businesses and offers a range of services covering most financial activities. For example, while proprietary trading activity has become commonplace at large and midsize banks, these institutions generate significant noninterest income from loan sales, servicing, securitization, ratings advisory, and fund management. Moreover, the broker-dealer subsidiaries of LCBGs, along with independent investment banks, are the leading securitizers of a wide range of assets, including into complex structures at the leading edge of financial engineering.

**Figure 2. Financial Sector Assets, 2005**



Source: Haver Analytics.

5. *Against a backdrop of low interest rates and rapid house price inflation in recent years, housing finance has moved to the center of banking activity and innovation.* Large banks have transformed mortgages into a bulk commodity to be originated, securitized, and re-securitized into different risk categories for sale to domestic as well as international investors. Small and midsize banks have joined the cycle of origination and loan sale but, less able to compete against large banks with a national presence, have actively been supplementing their mortgage income with commercial real estate (CRE) lending, including for condominium construction, that requires more intimate knowledge of local conditions.

6. ***There has been substantial product innovation in the market for housing finance.*** Households have traditionally been able to capitalize on steep yield curves with adjustable rate mortgages (ARMs) and step up home equity extraction with second mortgages or home equity lines of credit (HELOCs). More recently, they have also been able to purchase otherwise unaffordable homes with nontraditional ARMs carrying interest-only, negative-amortization, or low-documentation features and subsequently refinance back into fixed 15 or 30-year mortgages. Some 80 percent of the refinancing boom in 2002–03 involved traditional mortgages and HELOCs; two years later, spurred by competition between banks and mortgage companies, the market is characterized by a more complex product mix with more difficult-to-understand risks (Box 1).

### B. Exposures and Risks at LCBGs

7. ***Given their size and scope, a survey of LCBGs should capture the essence of industry trends.*** A focus on holding companies (as opposed to banking subsidiaries) is expedient for the equity market-based analysis to follow, because the BHC is the dominant listing unit in the banking system. The 20 LCBGs account for about two-thirds of consolidated BHC assets; one-half of net income; three-quarters of BHC securities broker-dealer assets; and virtually all BHC derivatives activity.<sup>31</sup>

8. ***The LCBGs form a heterogeneous set.*** They include 16 U.S. BHCs and four subsidiaries of European banks. All are financial holding companies under the Gramm–Leach–Bliley Act, a status that broadens their authority to diversify functionally under the “umbrella” supervision of the Federal Reserve Board. Their emphasis on nonbank activity differs, however, with assets of their broker-dealer and insurance underwriting subsidiaries varying across LCBGs from 0–30 percent and 0–5 percent of consolidated assets, respectively. The LCBGs’ banking strategies are similarly diverse, ranging from relatively traditional (mortgages and credit cards, funded by retail deposits) to complex (trading and special purpose vehicle financing for large corporate clients, funded in the markets).<sup>32</sup>

9. ***As corporate sector savings have grown, credit to households has become the mainstay of LCBG business.*** Excluding trading assets, exposure to the household sector expanded 3 percentage points, to 36 percent of total assets, in the three years to end-September 2005, while exposure to the corporate sector correspondingly contracted to 18 percent of assets. Given the historically superior credit performance and recovery value of

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<sup>31</sup> At end-September 2005, the system consisted of 7,527 commercial banks and 2,288 BHCs. Some LCBGs own several hundred bank (and nonbank) subsidiaries. Data for the LCBGs cover only those institutions that were in existence at end-September 2005, with market data restricted to the 16 U.S.-listed LCBGs.

<sup>32</sup> At end-September 2005, core deposits varied from 3–65 percent of liabilities and household sector exposure (including investments in MBSs) from 2–68 percent of assets, with a rank correlation coefficient of 0.44.



### Box 1. Mortgage Market Innovation: A Structural Break?

***The issue of credit risk in banks' housing exposures has received limited attention in the recent literature.*** Reasons include the traditionally low delinquency rates (relative to commercial and industrial loans) and high recovery rates on residential mortgages as well as the geographic diversification often provided by securitized assets.

***This may partly reflect continued government involvement.*** Although now making up less than half of the overall MBS market, MBSs guaranteed by Fannie Mae and Freddie Mac, the two largest housing government-sponsored enterprises (GSEs), continue to account for the bulk of bank-held MBSs.<sup>1</sup> Consistently small spreads between agency debt and treasuries indicate a long-standing market belief that default risks of the two types of securities are similar, notwithstanding clear statements by the Treasury—and on every agency bond indenture—that the two GSEs do not enjoy a credit guarantee from the U.S. government.

***As the housing GSEs have come under regulatory pressure in recent years, banks and mortgage companies have emerged as the main market innovators.*** While the GSEs have focused on the securitization of conforming, fixed-rate mortgages, other market participants have gained market share by packaging newer mortgage products into more complex MBSs, including through re-securitization to create MBS-backed collateralized mortgage obligations with separate risk tranches.

***The increased prevalence of ARMs may have altered a traditionally weak relationship between interest rates and foreclosures.*** Attention has focused on the “payment shock” risk posed by ARM resets in an environment of rising interest rates and softening house prices. More specifically, bank regulators have expressed concern that products such as payment-option ARMs that traditionally served the needs of niche borrowers with large but irregular cash flows—the proverbial “Porsche salesman”—may in, 2004–05, have been extended to stretched first-time homebuyers or property investors, with insufficient due diligence and underwriting.

***The market response thus far suggests that upcoming ARM resets carry both market risk and credit risk.*** In a typical pattern, proactive originators contact borrowers as reset dates approach, offering refinancing of ARMs into longer debt-service profiles. To the extent that borrowers are concerned about rising interest rates, this could trigger some increase in prepayment activity.<sup>2</sup>

<sup>1</sup> With \$2.6 trillion of guaranteed MBSs and \$1.5 trillion of agency debt outstanding, Fannie Mae and Freddie Mac remain the largest underwriters of and investors in the U.S. mortgage market.

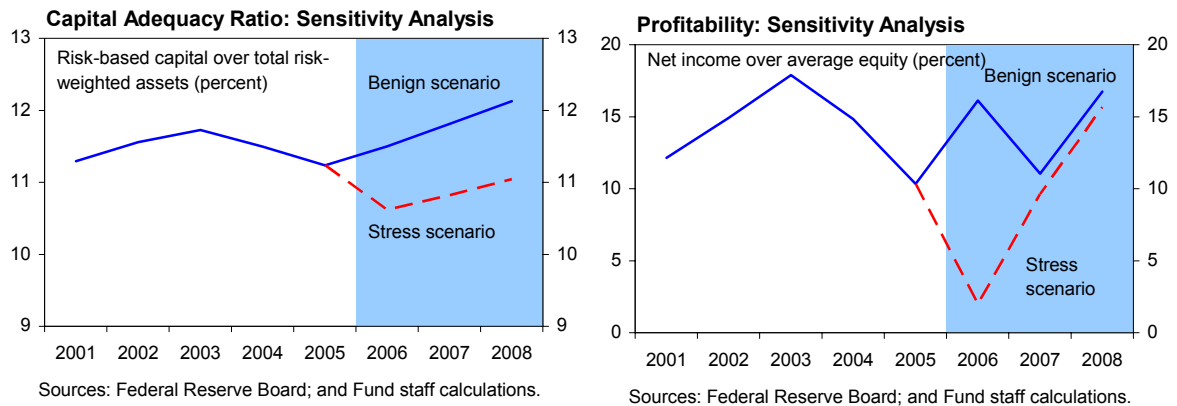
<sup>2</sup> Private mortgage databases suggest stretched homebuyers with nontraditional mortgages are the exception, not the rule. Cagan (2006), for instance, estimates that \$1.9 trillion of ARMs were originated in 2004–05, amounting to about 20 percent of 1-4 family mortgages outstanding; that 23 percent of such ARMs carried below-market initial “teaser” interest rates of 4 percent or less; and that 51 percent of the latter were to households with equity shares in their homes of 15 percent or less. Usefully, Cagan also estimates a national median discount of 14–16 percent on foreclosed home disposals during January 2004–June 2005.

mortgages over commercial and industrial portfolios, the sectoral shift would normally augur well for asset quality. As the housing market is beginning to cool, however, concerns are growing that payment resets on ARMs and nontraditional mortgages could shock many marginal households (Box 2).

### Box 2. LCBG Sensitivity to a Real Estate Shock: A Material Issue?

*Although housing and commercial real estate (CRE) markets are expected to cool in a gradual and orderly manner, a more abrupt adjustment with potentially adverse impact on the banking system remains a concern.*<sup>1</sup> Despite the mitigating and complicating factors already identified, a simple analysis of LCBG balance sheets helps provide an order of magnitude on the potential costs.

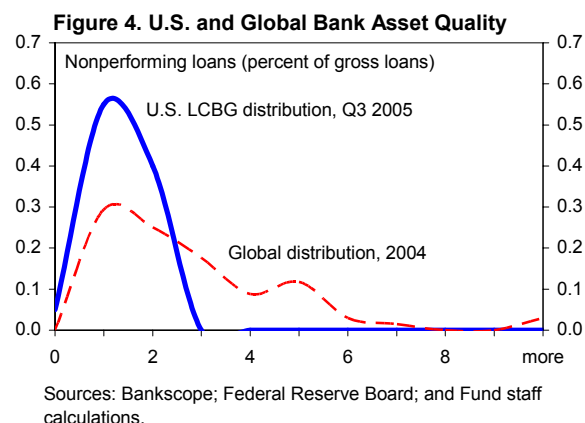
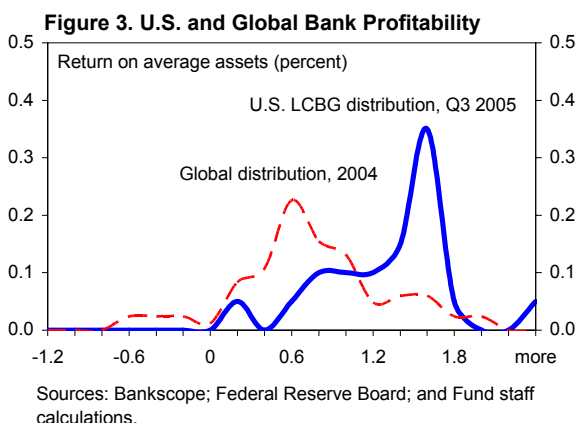
*Sensitivity analysis on the LCBGs as a group suggests real estate-related credit risk could materially dent profitability, but not capital.* The exercise, which focused on retained loan books, setting aside MBS portfolios, sought to isolate the impact of a deterioration in the credit quality of 1–4 family residential and CRE loans while keeping loan loss allowances constant relative to noncurrent loans. Delinquency and net charge off rates for 2006–08 were increased to their highest recorded values since 1990.<sup>2</sup> Relative to a benign baseline projection, the stress scenario indicated declines of about 8 percent (1 percentage point) for the average capital adequacy ratio for 2006–08; 42 percent ( $\frac{1}{2}$  percentage point) for returns on assets (ROA); and 38 percent ( $5\frac{1}{2}$  percentage points) for returns on equity. In sum, aggregate capital remained above regulatory floors, although aggregate profits fell by a large margin.



<sup>1</sup> CRE loans, in contrast to mortgages, have experienced fairly severe credit problems in the past, and CRE concentrations have reportedly increased at many small and midsize banks in the last five years.

<sup>2</sup> Delinquency rates on a 90-day basis, including nonaccrual loans, were conservatively marked up to the highest recorded values for the banking system as a whole on a 30-day basis. The baseline assumed that growth rates of total assets and gross loans, relative loan shares, and noncurrent loan ratios and net charge off rates would remain at their 2005 values through 2008.

10. *In any event, record financial results may prove difficult to sustain.* LCBGs outperformed the 100 largest banks worldwide, in terms of ROA, in 2005 (Figure 3). Real estate-related revenues contributed almost one-third of total gross income, supported by large trading gains at five LCBGs late in the year. Delinquency and net charge off rates fell to all-time lows, although an increasing ratio of loan-loss allowances to noncurrent loans suggested LCBGs were not expecting further improvements in credit quality (Figure 4). If faced with a material slowing of housing activity and related credit demand, and an uptick in foreclosures, LCBGs would be challenged to offset the revenue impact through increased lending to other sectors.



### C. Market-Based Surveillance

11. *With regulatory data not keeping pace with innovation, market-based surveillance has become an important complement to bank supervision.* Informational lacunae are especially evident in the reporting of hedging and credit risk transfer activity.<sup>33</sup> Banking agencies, therefore, maintain continuous supervisory contact with the largest institutions, including through the Large Complex Banking Organization Program and other protocols. Market participants, in turn, tend to build trading strategies around credit opinions from the rating agencies, which are uniquely positioned to assess a wide range of structured transactions. As part of its financial stability function, the Federal Reserve also monitors market-based indicators.<sup>34</sup>

12. *The DD measure used in this paper suggests that LCBG financial soundness in 2004–05 was at its strongest level in a decade.* The choice of an equity-based measure over one based on newer credit risk transfer markets facilitates analysis over a longer time frame, with a stronger accent on profit expectations than credit events.<sup>35</sup> Calculated in its simplest form, the DD provides insights on soundness trends over time and across firms rather than precise probabilities of failure—particularly since fluctuations can sometimes be the result of shifts in investor attitudes toward risk, and less a consequence of actions by institutions under study. Results for individual LCBGs point to steady improvements in soundness in the period after the large corporate defaults of 2002.

<sup>33</sup> The regulatory data do not, for instance, separate derivatives dealing positions from proprietary hedges, or clarify whether interest and exchange rate contracts represent net long or short positions, or identify holdings of collateralized debt and mortgage obligations by tranche.

<sup>34</sup> Nelson and Perli (2005) describe various indicators used by Federal Reserve staff, including risk-neutral probabilities of default based on credit default swap spreads and actual default probabilities of default based on Moody's KMV's "expected default frequencies", which map calculated DDs to observed firm-level default data.

<sup>35</sup> Indeed, "DD" may be a misnomer, given that it represents distance to insolvency rather than default.

13. ***An apparent increase in the risk diversification of LCBGs as a group is also observed, underscoring the potential value of system-level surveillance.*** The “system DD” for the portfolio of LCBGs, embedding all correlations across institutions, is observed to climb faster than the average of individual DDs, implying a reduced likelihood of a shock hitting all firms contemporaneously. The widening difference between the two indicators appears to reverse a ten-year trend, observed through 2003, that had suggested LCBGs were becoming increasingly exposed to common shocks.<sup>36</sup> System DDs for the investment banking, insurance, and nonfinancial corporate sectors are also observed to improve.

14. ***The findings suggest no material differences in soundness among LCBGs based on their appetite for real estate exposure or emphasis on noninterest income*** (Figure 5). Separating LCBGs into two subsets, above and below the unweighted 2003–05 average ratio of real estate exposure to total assets, reveals a minor downtick in soundness at the former group in 2005, although the two subsets’ average DDs remained at similar levels. This appears to indicate that markets remained relatively sanguine about risk-return tradeoffs related to the real estate sector. A similar exercise based on the ratio of noninterest income to total gross income was also inconclusive, notwithstanding the narrowing of term premiums.

#### **D. Regulation and Oversight**

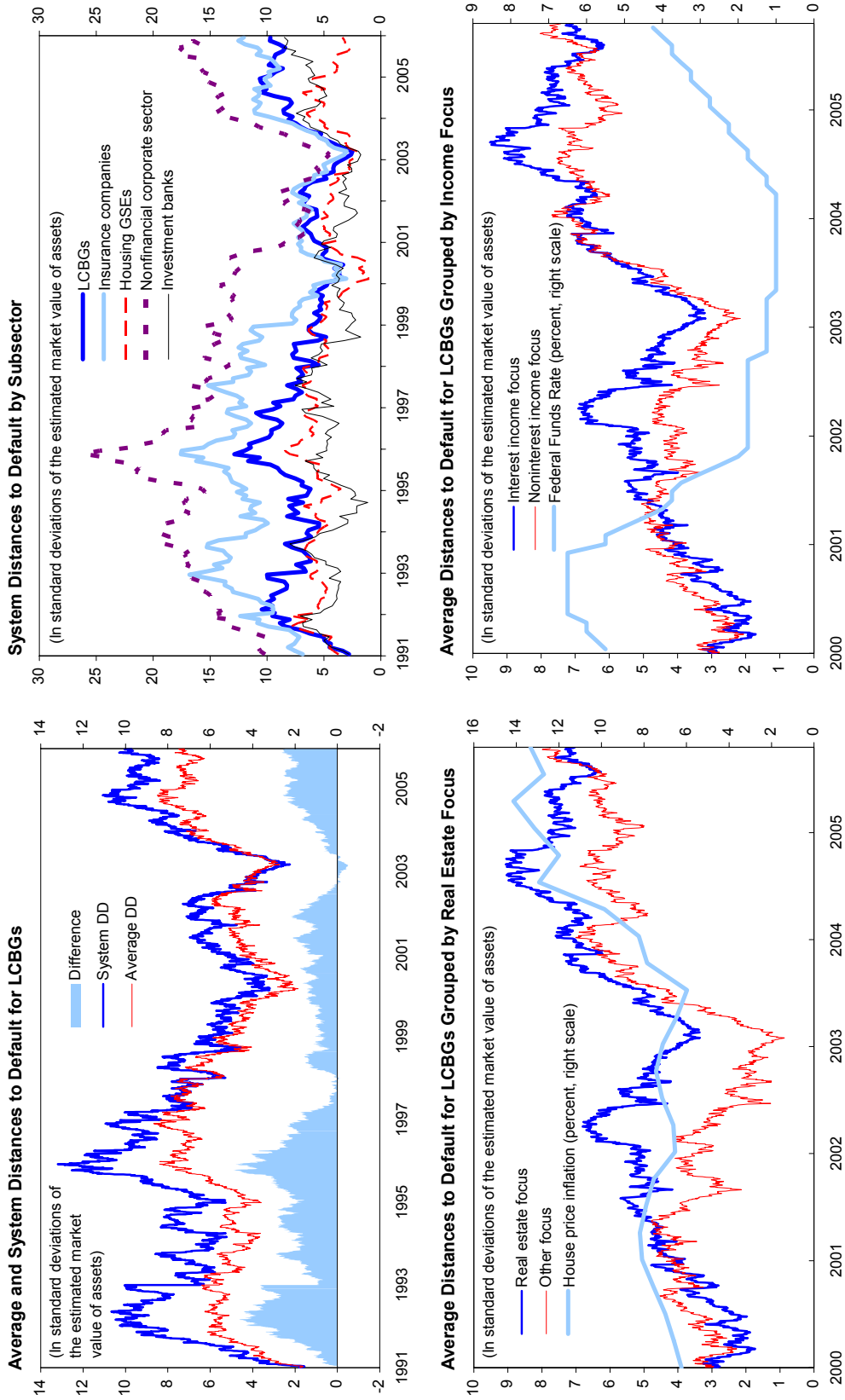
15. ***The foregoing analysis, while indicative of a banking system in good health, underscores the surveillance challenges spawned by innovation.*** After years of benign conditions, new market segments could be tested in the period ahead, especially if there is a “tail event” related to global imbalances. However, accounting data shed little light on growing risk transfer activity, while market prices cannot be assumed to perfectly reflect underlying risks. In practice, U.S. regulators have met the challenge by focusing on a few systemic institutions, with an emphasis on continuous supervisory contact, internal controls, counterparty risk management, and measures to ensure rapid clearing in critical market segments. Led by the Federal Reserve, they also monitor a host of market signals.

16. ***Functional divisions remain in evidence.*** With consolidation across business lines slowing, umbrella supervision has not taken on all the operational intensity anticipated under the Gramm–Leach–Bliley Act. This relates in part to the fact that synergies between banking and insurance businesses have proven elusive, as demonstrated by Citigroup divesting its

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<sup>36</sup> In other words, banks were diversifying at the firm level while taking on similar exposures at the group level. Houston and Stiroh (2006), also basing their analysis on equity valuations, present evidence of a contemporaneous increase in systemic financial sector risk and decrease in idiosyncratic risk during 1995–2002.

Figure 5. Distance to Default Indicators for the U.S. Financial System



Sources: Datastream; Haver Analytics; and Fund staff calculations.

insurance arm in 2005 in favor of an “open architecture” model that did not limit customers to proprietary insurance products. Similarly, leading investment banks have shown themselves reluctant to submit to umbrella oversight by the Federal Reserve, generally opting to acquire industrial loan companies over commercial banking subsidiaries. In most respects, U.S. financial supervision, therefore, remains highly decentralized.

17. ***Nevertheless, the regulatory system continues to adapt.*** Bank supervision is becoming more quantitative and risk-focused, with market studies playing an important supporting role. Implementation of Basel II should help improve the “granularity” of supervisory data, providing more transparency on the largest banks’ internal estimates of probabilities of default, losses given default, portfolio correlations, and value at risk. Moreover, housing GSE reform tops the Administration’s agenda, followed potentially by greater federal involvement in insurance regulation.

### **E. Conclusion**

18. ***Financial soundness of LCBGs, as well as investment banks and insurers, is found to have improved in 2003–05.*** Distance-to-default measures are at multi-year highs, while weakening comovements of LCBG risk profiles point to diversification gains at a system level. Dividing LCBGs into real estate-focused and other, more diversified subsets, or by the share of noninterest income in total gross income, reveals no meaningful differences.

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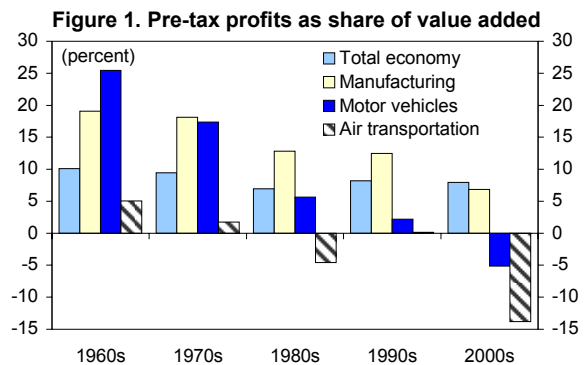
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## VI. STRUCTURAL CHANGE AND COMPETITION AMONG AUTO MANUFACTURERS AND AIRLINES<sup>37</sup>

### A. Introduction and Summary

1. *The weak performance of the U.S. auto manufacturing and air transportation industries has raised questions regarding their systematic importance.* Two of the major domestic car manufacturers and their financing subsidiaries account for about 10 percent of outstanding high-yield debt (J.P. Morgan, 2005). The automotive industry also accounts for nearly 6 percent of single-employer, defined-benefit pension plan participants insured by the Pension Benefit Guaranty Corporation (PBGC), while the air transportation industry accounts for 2 percent (PBGC, 2005a).

2. *The macroeconomic significance of these sectors has fallen, in part reflecting heavy losses.* The two industries each account for about ½–1 percent of total value added, and similar shares of employment. Both industries have experienced especially difficult times in recent years. Profitability in the auto industry has continued its decades-long downward trend; airline profits, which have been below average for some time already, also took a sharp dive in the last few years (Figure 1). Although the overall macroeconomic impact of further decline in these sectors would likely be limited, further wage, benefit and employment losses among auto and airline workers could intensify a debate regarding the rising exposure of individuals to economic and financial risks.

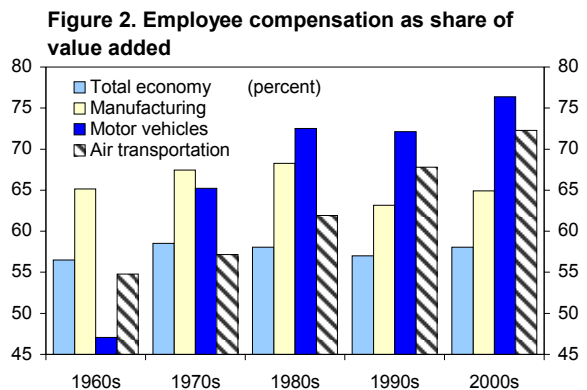


Sources: Haver Analytics; and Fund staff calculations.

### B. An Anatomy of Losses

3. *Several factors have contributed to recent losses among auto manufacturers and airlines:*

- *Employee compensation* (Figure 2). Compensation growth mirrored robust revenue growth in the early and mid-1990s. However, firms found themselves unable to slow compensation growth when revenues



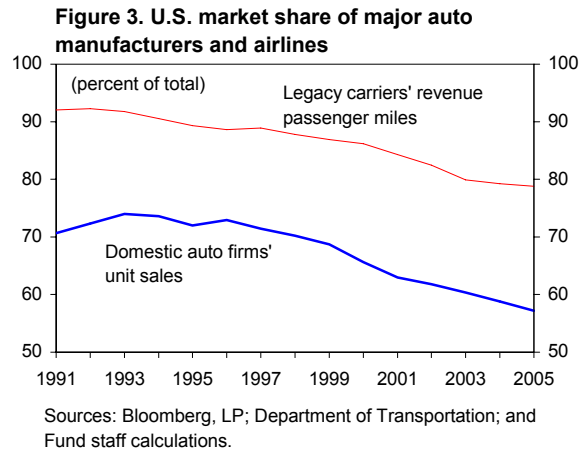
Sources: Haver Analytics; and Fund staff calculations.

<sup>37</sup> Prepared by Andrew Swiston.

stagnated, in part because of their reliance on multi-year agreements negotiated with labor unions. As a result, the share of employee compensation in value added, which was already high by economy-wide standards, rose further in recent years. With an aging workforce, the auto sector was hit especially hard by rising employee/retiree benefits, which grew from a quarter of overall compensation in the 1990s to a third since 2000.

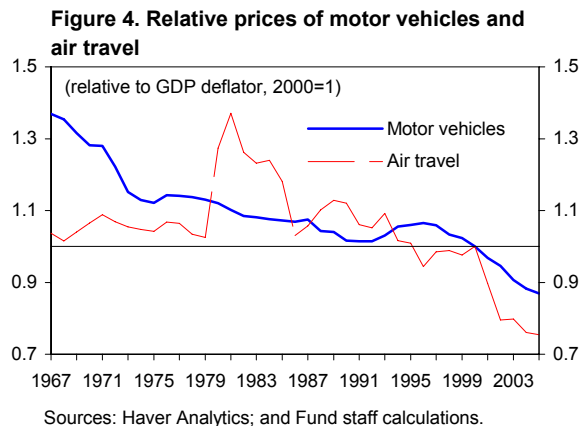
- ***Declining market share.***

Competition has prevented firms from raising prices to maintain profitability, given their loss of market share. The market share of the once-dominant “Big Three” automakers has dropped from 75 percent in the mid-1990s to less than 60 percent at present, mainly vis-à-vis foreign automakers (Figure 3).<sup>38</sup> Meanwhile, the market share of legacy airlines fell from over 90 percent in the early 1990s to less than 80 percent currently.<sup>39</sup>



- ***Falling relative output prices.***

Competition has also prevented firms from raising prices to maintain profitability. After a period of relative stability, auto prices have fallen 20 percent relative to the GDP deflator since the mid-1990s (Figure 4). The price of air travel declined in the early 1990s, and, after a slight rebound through 2000, dropped 25 percent relative to the



<sup>38</sup> Domestic auto parts suppliers have also lost market share. Imported parts as a share of domestic auto output has risen from 16 to 21 percent since the late 1990s, and employment in the parts industry relative to other auto industry employment has fallen 15 percent since 2000.

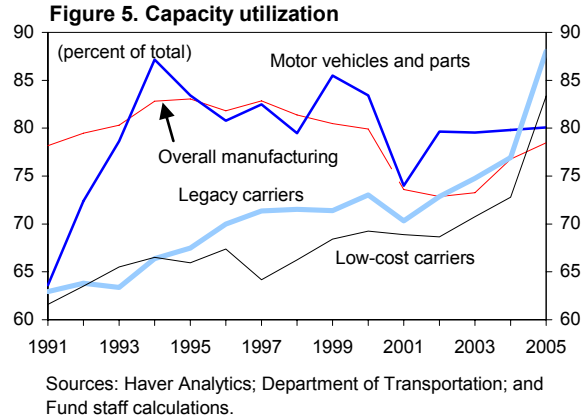
<sup>39</sup> “Legacy airlines” refers to the six large, national carriers (historical data includes a seventh, which in 2001 was taken over by one of the other six). “Low-cost airlines” refers to seven, mostly smaller, national carriers. “Regional airlines”—smaller carriers that do not maintain a national flight network—are not included in the analysis. See GAO (2004) for a detailed description, as well as a thorough analysis of competition among airlines.



GDP deflator in the last five years.  
Real revenue per passenger per mile  
has been cut in half since 1990.

4. ***Despite new sources of competition, spare capacity doesn't appear to be an industry-wide problem in either sector.***

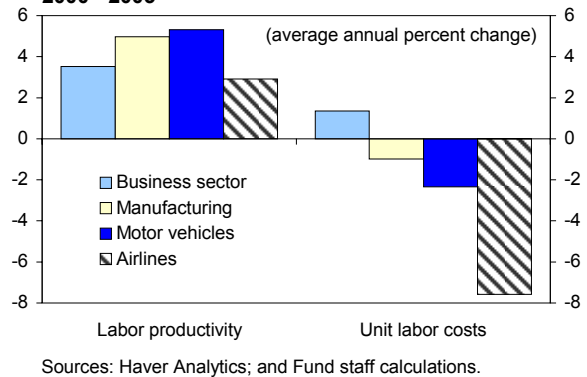
Capacity utilization among auto manufacturers has been higher than in overall manufacturing, while among airlines, capacity utilization as measured by the “passenger load factor”—the percent of seats filled by paying passengers—has risen by 20 percentage points since the early 1990s, at both legacy and low-cost airlines (Figure 5).



5. ***In response, both sectors have cut payrolls and raised productivity, but not enough to restore profitability.***

In both the auto and airline sector, the number of employees has fallen at an annual rate of around 4 percent since 2000, compared with largely unchanged payrolls in the economy as a whole. Firms in both sectors have also negotiated reductions in compensation of employees. As a result, productivity growth has remained robust despite weakness in revenues, and unit labor costs have been cut (Figure 6).

**Figure 6. Labor productivity and unit labor costs, 2000 - 2005**

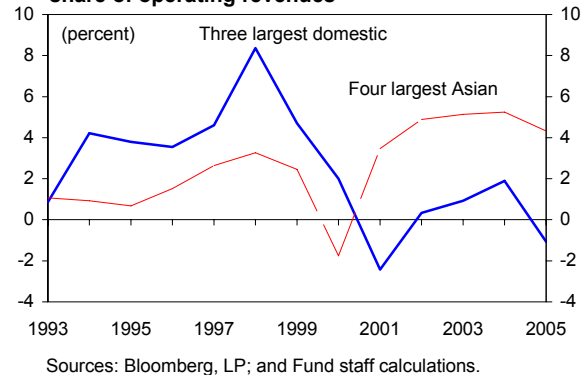


### C. Intra-Industry Trends

6. ***Foreign auto companies have increasingly supplanted domestic companies in the U.S. market.***

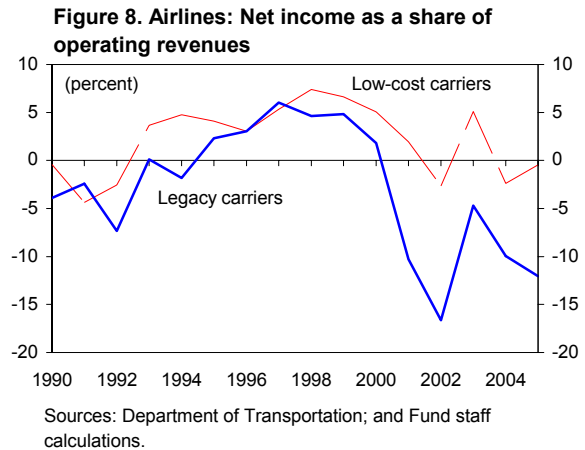
Having enjoyed higher profitability in the 1990s, the three major domestic auto companies have struggled to break even in recent years while their four largest Asian competitors remained profitable (Figure 7). The foreign firms appear to have attained higher vehicle quality and a better brand image than domestic firms—illustrated by the fact that average prices are about \$2,000 higher per vehicle for a standard model (Moody's, 2005, McKinsey Global Institute, 2005). Customer satisfaction and resale value of the vehicles of foreign companies have also been consistently higher (Moody's, 2005, Sloan, 2006).

**Figure 7. Auto manufacturers: Net income as a share of operating revenues**



7. ***Partly as a result, foreign car companies have maintained healthier credit ratings and financial ratios in recent years.*** The four largest Asian firms, for example, have all improved their credit ratings since 2000, while two of the three major domestic firms have seen their rating fall by eight steps from investment grade to “junk” status. The competitive advantage of foreign firms extends to their U.S.-based operations. While domestic firms have reduced their North America-based production by 2 percent per year since 1997, foreign firms have expanded their North America-based production by 6 percent per year, with their share of total U.S. production rising from 20 percent to 30 percent.

8. ***There has also been a wide disparity between the performance of legacy airlines and low-cost airlines.*** The revenues of legacy airlines have fallen almost 7 percent per year since 2000, while revenues of low-cost carriers have grown at a 3½ percent annual rate. Despite success by legacy carriers in cutting costs, the cost gap per passenger mile between legacy and low-cost airlines has remained, and the growing market share of low-cost airlines has allowed them to avoid the massive losses experienced by legacy airlines (Figure 8). Of the seven legacy carriers operating in 2000, five have gone through Chapter 11 bankruptcy restructurings. Between 2000 and 2006, the credit ratings of legacy carriers were lowered five and a half steps on average, while low-cost carriers’ ratings were lowered an average of one step.



9. ***In both industries, less profitable firms have clung to outdated business models and face significant costs related to pension and health benefits:***

- In the auto sector, unionization and firm age have added to the legacy costs facing domestic firms—at about \$130 billion (1 percent of GDP), their unfunded liabilities related to pension plans and other benefits are several times higher than their competitors’ (FitchRatings, 2005). In addition, retiree medical costs of domestic auto firms amount to about \$10 billion per year, an amount significantly higher than their competitors (Moody’s, 2005). Domestic companies also lagged their competitors in introducing production process improvements, adding new vehicle features, and raising vehicle dependability (McKinsey Global Institute, 2005).
- Labor costs account for over 40 percent of the unit cost difference between legacy airlines and low-cost airlines. This reflects a more highly-tenured, highly-unionized workforce and greater retiree costs (GAO, 2004). For example, the unfunded pension liabilities of legacy airlines amount to \$22 billion (0.2 percent of GDP), not including \$9 billion in claims that the PBGC already assumed in 2005 from two firms in

Chapter 11 (PBGC, 2005b). Low-cost carriers, by contrast have not offered significant defined-benefit pension plans (Kiefer, 2005). Planes of legacy airlines also spend fewer hours in flight each day, in part because of older fleets with more different types of planes, which raises maintenance and training costs (GAO, 2004).

#### D. Conclusion

10. ***The overall macroeconomic effects of further difficulties in the domestic auto and airline sectors would likely be manageable.*** Airlines are a small proportion of the economy, and the importance of auto manufacturers has already been in decline for some time. Moreover, the presence of healthy firms in each industry means that, from a macroeconomic perspective, difficulties at any firms could be offset to some extent by expanding capacity at others—as is currently occurring—or takeover of weak firms by strong ones. Even the unfunded pension liabilities covered by the PBGC represent a relatively small risk to fiscal outlays, given that losses would likely be spread over several years.

11. ***However, recent cutbacks of promised pension and health benefits highlight the broader issue of how workers and firms will adapt to a world of global competition.*** Recently-approved legislation to increase PBGC premiums and index them to inflation will limit risks to the PBGC but impose a further burden on firms with underfunded defined-benefit plans. This could accelerate the trend toward defined-contribution pension plans which, combined with the declining generosity of worker and retiree health benefits, transfers risk from firms to individuals.

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