Appendix to "Nowcasting: The Real-Time Informational Content of Macroeconomic Data"*

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August 3, 2007

* Forthcoming, Journal of Monetary Economics.

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A Appendix

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A.1 Transformations of the Data Series

The transformations we apply to the raw data (X_{it}) to induce stationarity (x_{it}) are:

	transformation	**Description**
1	$x_{it} = (1 - L^3)(1 + L + L^2)\ X_{it}$	quarterly difference
2	$x_{it} = (1 - L^3)(1 + L + L^2) \log X_{it} \times 100$	quarterly growth rate
3	$x_{it} = (1 - L^3)(1 + L + L^2)(1 - L^{12}) \log X_{it} \times 100$	quarterly difference of yearly growth rate

Our transformations are such that the transformed variables correspond to a quarterly quantity when observed at the end of the quarter. The particular transformation that we apply to a given series is reported below in column 4 of the table in Section C. Note that transformation 3 removes trends integrated up to order two and is applied to prices and nominal wages, which are characterized by the quite persistent yearly inflation rates.

A.2 Estimation of the Model

The parameters of the model are estimated using data up to the last date when the balanced panel is available. In this section, for expositional convenience, we drop the dependence of data on the vintage. We denote by T the sample size used for the estimation of the parameters. For any given vintage v_j we have $T = \min\{T_{1v_j}, ..., T_{nv_j}\}$.

We first standardize the data so as they have sample mean equal to zero and unitary sample variance:

$$z_{it} = \frac{1}{\hat{\sigma}_i}(x_{it} - \hat{\mu}_{it}),$$

where $\hat{\mu}_{it} = \frac{1}{T}\sum_{t=1}^{T} x_{it}$ and $\hat{\sigma}_i = \sqrt{\frac{1}{T}\sum_{t=1}^{T}(x_{it} - \hat{\mu}_i)^2}$.

A preliminary estimate of the common factors is computed by mean of sample principal components which are the solution of the following problem:

$$\left(\tilde{F}_t, \hat{\lambda}_i\right)_{\{t=1,..,T;\ i=1,...,n\}} = \arg\min_{F_t,\Lambda} \sum_{t=1}^{T}\sum_{i=1}^{n} \left(z_{it} - \lambda_i F_t\right)^2.$$

To derive these estimators, define the sample correlation matrix of the observables (z_t) as:

$$S = \frac{1}{T}\sum_{t=1}^{T} z_t z_t'.$$

Denote by D the $r \times r$ diagonal matrix with diagonal elements given by the largest r eigenvalues of S and denote by V the $n \times r$ matrix of the corresponding eigenvectors subject to the normalization $V'V = I_r$. We estimate the factors as:

$$\tilde{F}_t = V' z_t.$$

The factor loadings, Λ, and the covariance matrix of the idiosyncratic components, $\Psi = \mathrm{E}[\xi_t \xi_t']$, are estimated by regressing the variables on the estimated factors:

$$\hat{\Lambda} = \sum_{t=1}^{T} z_t \tilde{F}_t' \left(\sum_{t=1}^{T} \tilde{F}_t \tilde{F}_t' \right)^{-1} = V$$

and

$$\hat{\Psi} = \mathrm{diag}(\mathrm{S} - \mathrm{VDV}).^{1}$$

The other parameters are estimated by running a VAR on the estimated factors, precisely:

$$\hat{A} = \sum_{t=2}^{T} \tilde{F}_t \tilde{F}_{t-1}' \left(\sum_{t=2}^{T} \tilde{F}_{t-1} \tilde{F}_{t-1}' \right)^{-1}$$

$$\hat{\Sigma} = \frac{1}{T-1}\sum_{t=2}^{T} \tilde{F}_t \tilde{F}_t' - \hat{A} \left(\frac{1}{T-1}\sum_{t=2}^{T} \tilde{F}_{t-1} \tilde{F}_{t-1}' \right) \hat{A}'$$

Define $\hat{P}$ as the $q \times q$ diagonal matrix with the entries given by the largest q eigenvalues of $\hat{\Sigma}$ and by $\hat{M}$ the $r \times q$ matrix of the corresponding eigenvectors, then:

$$\hat{B} = \hat{M} \hat{P}^{1/2}.$$

[1] For any square matrix A, $\mathrm{diag}(A)$ is the matrix A with off-diagonal elements set equal to zero. In estimating Ψ, we estimate only the diagonal elements and set the off-diagonal elements to zero.

A.3 Estimation of the common factors and relations to principal components

Collecting the estimated parameters in $\hat{\theta}$ the common factors can be extracted through the Kalman smoother as noted in the text in Section 3.[2] Loosely speaking, the Kalman smoother computes the factors by weighting the innovation content of each variable $(x_{i,t+1} - \mathrm{E}[x_{i,t+1}|x_1, ..., x_T; \mathcal{M}_{\hat{\theta}}])$ accordingly to its news (the part driven by common shocks u_t) to noise (the idiosyncratic components ξ_{it}) ratio.

If there are no missing observations, this estimator of the common factors generalizes principal components and weighted principal components. In fact, if we constrain $\hat{A} = 0$ and $\hat{\Psi} = \frac{1}{n}\sum_{i=1}^{n} \hat{\psi}_i I_n = \bar{\psi} I_n$, then the second step is redundant since the factor estimated with the Kalman smoother will be proportional to the principal components estimates:

$$\hat{F}_t = (\bar{\psi} I_r + \hat{\Lambda}'\hat{\Lambda})^{-1}\hat{\Lambda}' x_t \propto V' z_t = \tilde{F}_t.$$

However, if only $\hat{A} = 0$ is imposed, then

$$\hat{F}_t = (I_r + \hat{\Lambda}'\hat{\Psi}^{-1}\hat{\Lambda})^{-1}\Lambda'\hat{\Psi}^{-1} x_t,$$

so the estimated factors are proportional to the weighted principal components, i.e. principal components on the weighted data $\hat{\Psi}^{-1/2} x_t$.[3]

With both principal components and generalized principal components, the estimates of the factors are computed by projecting only on the present observations. As a consequence, the dynamic properties of the factors are not taken into account. In our case, the Kalman filter performs the projection on present and past observations and, therefore takes into consideration the dynamics of the factors and the degree of commonality of each time series. However, when running the Kalman smoother, we do not exploit the time series and cross-sectional correlations of the idiosyncratic components which are treated as uncorrelated both in time and in the cross section. However, under the approximate factor structure defined below, estimates are still consistent.

[2] Notice that the parameters Λ, A, Ψ, B can reestimated by OLS on the new factors $\hat{F}_t$ using the implied second order moments which can be computed by running the Kalman smoother. This is one step of the EM algorithm. By iterating until convergence, we obtain Maximum Likelihood estimates under Gaussian assumptions. Such a procedure has been used by Engle and Watson (1981) and Stock and Watson (1989) with an handful of time series to compute coincident and lagging indicators, and by Quah and Sargent (2004) with a larger panel of time series. On the development of this idea for the study of large cross-section and some theoretical results see Doz, Giannone, and Reichlin (2006a).

[3] Different versions of such an estimator were proposed by Boivin and Ng (2006), Forni, Hallin, Lippi, and Reichlin (2005), Forni and Reichlin (2001).

A.4 Consistency and robustness

Our empirical model is very simple and easily implementable. Simplicity is achieved by imposing restrictive assumptions which are useful to maintain parsimony and hence forecasting power. While these assumptions introduce a potential source of misspecification, their effect vanishes asymptotically when the cross-section is large. This is a consequence of the following results from the literature on factor models using large panels.

Serial and Cross-sectional correlation of the idiosyncratic component

Th estimated model imposes the restriction that the idiosyncratic components are neither autocorrelated nor cross-correlated. However, the procedure above provides consistent estimates for large cross-section and large sample size under the following assumptions that define an approximate factor model for large cross-section (Forni, Hallin, Lippi, and Reichlin 2000, Stock and Watson 2002).

We assume that the common factors and the idiosyncratic components are stationary processes, therefore allowing for weak serial correlation. The following assumptions define an approximate dynamic factor model which allows for weak cross-sectional correlation of the idiosyncratic component.

A1. Common factors are pervasive

$$\liminf_{n\to\infty}\left(\frac{1}{n}\Lambda'\Lambda\right) > 0,$$

A2. Idiosyncratic factors are non-pervasive

$$\lim_{n\to\infty}\frac{1}{n}\left(\max_{v'v=1} v'\mathrm{E}[\xi_t\xi_t']v\right) = 0.$$

Assumption A1 implies that the common factors must be understood as sources of variation that remain pervasive as we increase the number of series in the data-set. Assumption A2 implies that idiosyncratic factors may affect more than one particular series, but the effects of an idiosyncratic shock are limited to a particular cluster of data and do not propagate throughout the economy.

Under Assumption A1 and A2, Forni, Giannone, Lippi, and Reichlin (2005) have shown that the estimated parameters $\hat{\mu}$, $\hat{\Lambda}$, $\hat{\Psi}$, $\hat{A}$, $\hat{B}$ are consistent as $n, T \to \infty$. Consistency of the common factors estimated by applying the Kalman smoother has been proved in Doz, Giannone, and Reichlin (2006b). Under slightly

different assumptions consistency of the parameters of the common factors estimated by principal components has also been shown by Bai (2003) and Stock and Watson (2002).

Time varying parameters

The model assumes that the parameters of the model are time invariant. However, this assumption can be relaxed since, as shown by Stock and Watson (2002), when the cross-sectional dimension is large, the estimates of the common factors are still consistent if the loadings change slowly over time.

Data revisions and robustness to parameterizations

Our econometric methodology does not take explicitly into account data revisions. However, under suitable assumptions, our estimates are robust to revision errors. Suppose that data released at vintage v_j are equal to the "true", or final data x_{it}, plus an error term $r_{it|v_j} = x_{it|v_j} - x_{it}$. If the true data have a common factor representation $x_{it} = \chi_{it} + \xi_{it}$ and revision errors $r_{it|vj}$ are orthogonal to the "true" data[4] and poorly cross-sectionally correlated, then they will be incorporated into the idiosyncratic components $x_{it|v_j} = x_{it} + r_{it|v_j} = \chi_t + \xi_{it|v_j}$ where $\xi_{it|v_j} = \xi_{it} + r_{it|v_j}$. This implies violating the assumption that the variance of the idiosyncratic component of each time series is constant over time. In fact, data revisions are usually larger for the more recent observations. This implies that the closer is t to v, the larger is $\text{Var}(r_{i,t|v_j})$ and consequently the larger is the variance $\tilde{\psi}_{i,t|v_j}$. Our procedure is robust to this situation since the estimates are consistent even under heteroscedasticity of the idiosyncratic component, see Bai (2003).

Our procedure does not consider data revisions on the target variable. Since GDP does not enter as a regressor in our nowcasting equation, data revisions can only distort the estimation of the regression coefficients $\hat{\alpha}$ and $\hat{\beta}$. Our method could be adapted to take into account data revisions, following Koenig, Dolmas, and Piger (2003). Although we do not implement these methods, we check for the robustness of results to the problem of revision errors in GDP by comparing the properties of the estimates using final GDP and those obtained using real time GDP releases collected by the Federal Reserve Bank of Philadelphia.

Table A.1 below, reports results for the out-of-sample performance of the model for different parameterizations and using the same simulated out-of-sample design described in Section 4.1 for the results in Table 2. In bracket we report results using real time vintages for GDP. Forecasts are computed the first Friday

[4]That is they are 'noise" in the sense of Mankiw and Shapiro (1986)

of the second month of the quarter which is closer to the middle of the quarter, the date in which real time vintages of GDP are collected by the Philadelphia Fed. Results show that the out-of-sample performance of the model is robust across parameterizations and to revision errors in GDP.

Table 1: Table A.1 Nowcasting GDP: robustness analysis

q/r	1	2	3	4	5	10
1	1.000	0.889	0.912	0.874	0.965	1.0968
	(0.938)	(0.877)	(0.946)	(0.897)	(0.998)	(1.224)
2	–	0.908	0.914	0.880	0.904	0.94315
	–	(0.891)	(0.867)	(0.823)	(0.828)	(0.886)
3	–	–	0.922	0.934	0.912	1.057
	–	–	(0.879)	(0.888)	(0.864)	(1.031)
4	–	–	–	0.940	0.960	1.120
	–	–	–	(0.896)	(0.908)	(1.140)
5	–	–	–	–	0.968	1.084
	–	–	–	–	(0.914)	(1.119)

Mean Squared Forecast Errors of the factor model for different specifications of the number of common factors, r in columns, and the number of common shocks, q in rows. Results obtained using real time GDP are reported in brackets. Evaluation sample: 1995q1-2004q4

B Data Releases and Sources

Block Name	Release Name	Website
Surveys 2	PMGR-Manufacturing	http://www.napm-chicago.org/current.pdf
Mixed 3	Advance Report on Durable Goods Manufacturers	http://www.census.gov/indicator/www/m3/adv/pdf/durgd.pdf
Mixed 3	Full Report on Durable Goods Manufacturers	http://www.census.gov/indicator/www/m3/prel/pdf/s-i-o.pdf
Mixed 3	Commercial Paper Outstanding	http://www.federalreserve.gov/releases/cp/table1.htm
Mixed 3	Construction Put in Place	http://www.census.gov/const/C30/release.pdf
Money & Credit	Consumer Delinq. Bulletin	http://www.aba.com/Surveys+and+Statistics/ss_delinquency.htm
Money & Credit	Aggregate Reserves	http://www.federalreserve.gov/releases/h3/
Money & Credit	Money Stock Measures	http://www.federalreserve.gov/releases/h6/
Money & Credit	Assets and Liabilities of U.S. Commercial Banks	http://www.federalreserve.gov/releases/h8/
Labor & Wages	The Employment Situation	http://www.bls.gov/news.release/pdf/empsit.pdf
Mixed 1	Consumer Credit	http://www.federalreserve.gov/releases/g19/
Mixed 1	Advance Monthly Sales For Retail and Food Services	http://www.census.gov/svsd/www/fullpub.pdf
Mixed 1	Monthly Treasury Statement of the U.S. Government	http://www.fms.treas.gov/mts/
Mixed 1	FT900 U.S. International Trade	http://www.census.gov/foreign-trade/Press-Release/
Ind. Production	Industrial Production and Capacity Utilization	http://www.federalreserve.gov/releases/G17/
Mixed 2	New Residential Construction	http://www.census.gov/indicator/www/newresconst.pdf
Mixed 2	Business Outlook Survey	http://www.phil.frb.org/econ/bos/index.html
PPI	Producer Price Indexes	http://www.bls.gov/news.release/pdf/ppi.pdf
CPI	Consumer Price Index	http://www.bls.gov/news.release/pdf/cpi.pdf
GDP & Income	GDP-detail	http://www.bea.gov/bea/dn/nipaweb/nipa_underlying/Index.asp
GDP & Income	GDP - release	http://www.bea.gov/bea/dn1.htm
GDP & Income	Personal Income and Outlays	http://www.bea.gov/bea/newsrel/pinewsrelease.htm
Housing	Manufactured Homes Survey	http://www.census.gov/const/www/mhsindex.html
Housing	New Residential Sales	http://www.census.gov/const/newressales.pdf
Surveys 1	Chicago Fed Midwest Manufacturing Index	http://www.chicagofed.org/economic_research_and_data/cfmmi.cfm
Surveys 1	Consumer Confidence Index	http://www.pollingreport.com/consumer.htm
Surveys 1	Michigan Survey of Consumers	http://www.sca.isr.umich.edu/main.php
Initial Claims	Claims, Unemployment Insurance Weekly Claims Report	http://ows.doleta.gov/unemploy/claims_arch.asp
Interest Rates	Freddie Mac Primary Mortgage Survey	http://federalreserve.gov/releases/h15/data/wr/cm.txt
Interest Rates	Selected Interest Rates	http://www.federalreserve.gov/releases/h15/update/
Financial	Wilshire Index	http://www.wilshire.com/Indexes/calculator/
Financial	S&P Indices	http://www.economy.com/freelunch/
Financial	Exchange rates	http://www.federalreserve.gov/releases/h10/update/
Financial	London Gold PM Fix	http://www.kitco.com/charts/historicalgold.html
Financial	New York Stock Exchange	http://www.economy.com/freelunch/

C Blocks and Individual Series

Block Name	Release	Series	Transformation
Surveys 2	PMGR-Manufacturing	Purchasing Managers Index (PMI)	1
Surveys 2	PMGR-Manufacturing	ISM mfg index: production (Institute for Supply Management)	1
Surveys 2	PMGR-Manufacturing	ISM mfg index: Employment	1
Surveys 2	PMGR-Manufacturing	ISM mfg index: inventories	1
Surveys 2	PMGR-Manufacturing	ISM mfg index: new orders	1
Surveys 2	PMGR-Manufacturing	ISM mfg index: suppliers deliveries	1
Mixed 3	Commercial Paper	Commercial paper month-end outstanding: Total (mil of $)	2
Mixed 3	Construction Put in Place	Construction put in place: Total (mil of current $)	2
Mixed 3	Construction Put in Place	Construction put in place: Private (mil of current $)	2
Mixed 3	Adv. Report Durables	New Orders: Durable goods industries (mil of $)	2
Mixed 3	Adv. Report Durables	New Orders: Nondefense capital goods (mil of $)	2
Mixed 3	Full Report Durables	New Orders: All manufacturing industries (mil of $)	2
Mixed 3	Full Report Durables	New Orders: All manuracturing industries w/unfilled orders (mil of $)	2
Mixed 3	Full Report Durables	New Orders: Nondurable goods industries (mil of $)	2
Mixed 3	Full Report Durables	Unfilled Orders: All manufacturing industries (mil of $)	2
Money & Credit	Consumer Delinq. Bulletin	Delinquency rate on bank-held consumer installment loans	2
Money & Credit	Aggregate Reserves	Monetary base (mil of $)	2
Money & Credit	Aggregate Reserves	Depository institutions reserves: Total (mil of $)	2
Money & Credit	Aggregate Reserves	Depository institutions: nonborrowed (mil of $)	2
Money & Credit	Money Stock Measure	M1 (mil of $)	3
Money & Credit	Money Stock Measure	M2 (mil of $)	2
Money & Credit	Money Stock Measure	M3 (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all commercial banks: Total (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all comm banks: Securities, total (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all comm banks: Securities, U.S. govt (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all comm banks: Real estate loans (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all comm banks: Comm and Indus loans (mil of $)	2
Money & Credit	Assets and Liabilities of Commercial Banks	Loans and Securities @ all comm banks: Consumer loans (mil of $)	2
Labor & Wages	Employment Situation	Unemployment rate	1
Labor & Wages	Employment Situation	Participation rate	1
Labor & Wages	Employment Situation	Mean duration of unemployment	2
Labor & Wages	Employment Situation	Persons unemployed less than 5 weeks	2
Labor & Wages	Employment Situation	Persons unemployed 5 to 14 weeks	2
Labor & Wages	Employment Situation	Persons unemployed 15 to 26 weeks	2
Labor & Wages	Employment Situation	Persons unemployed 15+ weeks	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Total	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Total private	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Goods-producing	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Mining	2

Block Name	Release	Series	Transformation
Labor & Wages	Employment Situation	Employment on nonag payrolls: Construction	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Manufacturing	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Manufacturing, durables	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Manufacturing, nondurables	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Service-producing	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Transportation and warehousing	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Utilities	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Retail trade	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Wholesale trade	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Financial activities	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Professional and business services	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: education and health services	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: leisure and hospitality	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Other services	2
Labor & Wages	Employment Situation	Employment on nonag payrolls: Government	2
Labor & Wages	Employment Situation	Avg weekly hrs. of production of nonsupervisory workers: Total private	2
Labor & Wages	Employment Situation	Avg weekly hrs of PNW: Mfg	2
Labor & Wages	Employment Situation	Avg weekly overtime hrs of PNW: Mfg	2
Labor & Wages	Employment Situation	Avg hourly earnings: Total nonagricultural ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: construction ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: Mfg ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: Transportation ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: Retail trade ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: wholesale trade ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: finance, insurance, and real estate ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: professional and business services ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: education and health services ($)	3
Labor & Wages	Employment Situation	Avg hourly earnings: other services ($)	3
Mixed 1	Consumer Credit	New car loans at auto finance companies (NSA): loan to value ratio	2
Mixed 1	Consumer Credit	New car loans at auto finance companies (NSA): Amount financed ($)	2
Mixed 1	Adv. monthly Sales	Sales: Retail & food services, total (mil of $)	2
Mixed 1	Monthly Treasury Statement	Federal govt deficit or surplus (bil of $) (NSA)	2
Mixed 1	U.S. Intern. Trade	Total merchandise exports, total census basis (mil of $)	2
Mixed 1	U.S. Intern. Trade	Total merchandise imports, total census basis (mil of $)	2
Mixed 1	U.S. Intern. Trade	Total merchandise imports (CIF value) (mil of $) (NSA)	2
Ind. Production	Industrial Production and Capacity Utilization	Total	2
Ind. Production	Industrial Production and Capacity Utilization	Final Products and non-industrial supplies	2
Ind. Production	Industrial Production and Capacity Utilization	Final products	2
Ind. Production	Industrial Production and Capacity Utilization	Consumer goods	2
Ind. Production	Industrial Production and Capacity Utilization	Durable consumer goods	2
Ind. Production	Industrial Production and Capacity Utilization	Nondurable consumer goods	2
Ind. Production	Industrial Production and Capacity Utilization	Business equipment	2

Block Name	Release	Series	Transformation
Ind. Production	Industrial Production and Capacity Utilization	Materials	2
Ind. Production	Industrial Production and Capacity Utilization	Materials, nonenergy, durables	2
Ind. Production	Industrial Production and Capacity Utilization	Materials, nonenergy, nondurables	2
Ind. Production	Industrial Production and Capacity Utilization	Mfg (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Mfg, durables (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Mfg, nondurables (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Mining (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Utilities (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Energy, total (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Non-energy, total (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Motor vehicles and parts (MVP) (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Computers, comm. equip., semiconductors (CCS) (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Non-energy excl CCS (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Non-energy excl CCS and MVP (NAICS)	2
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Total (NAICS)	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Mfg (NAICS)	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Mfg, durables (NAICS)	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Mfg, nondurables (NAICS)	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Mining	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Utilities	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Computers, comm. equip., semiconductors	1
Ind. Production	Industrial Production and Capacity Utilization	Capacity Utilization: Mfg excl CCS	1
Mixed 2	New Residential Construction	Privately-owned housing, started: Total (thous)	2
Mixed 2	New Residential Construction	New privately-owned housing authorized: Total (thous)	2
Mixed 2	Business Outlook Survey	Outlook: General activity	2
Mixed 2	Business Outlook Survey	Outlook: New orders	2
Mixed 2	Business Outlook Survey	Outlook: Shipments	2
Mixed 2	Business Outlook Survey	Outlook: Inventories	2
Mixed 2	Business Outlook Survey	Outlook: Unfilled orders	2
Mixed 2	Business Outlook Survey	Outlook: Prices paid	2
Mixed 2	Business Outlook Survey	Outlook: Prices received	2
Mixed 2	Business Outlook Survey	Outlook Employment	2
Mixed 2	Business Outlook Survey	Outlook: Work hours	1
PPI	Producer Prices	PPI: finished goods (1982=100 for all PPI data)	3
PPI	Producer Prices	PPI: finished goods less food and energy	3
PPI	Producer Prices	PPI: finished consumer goods	3
PPI	Producer Prices	PPI: intermediate materials	3
PPI	Producer Prices	PPI: crude materials	3
PPI	Producer Prices	PPI: finished goods excl food	3
PPI	Producer Prices	PPI: crude nonfood materials less energy	3
PPI	Producer Prices	PPI: crude materials less energy	3
CPI	Consumer Prices	CPI: all items (urban)	3

Block Name	Release	Series	Transformation
CPI	Consumer Prices	CPI: food and beverages	3
CPI	Consumer Prices	CPI: housing	3
CPI	Consumer Prices	CPI: apparel	3
CPI	Consumer Prices	CPI: transportation	3
CPI	Consumer Prices	CPI: medical care	3
CPI	Consumer Prices	CPI: commodities	3
CPI	Consumer Prices	CPI: commodities, durables	3
CPI	Consumer Prices	CPI: services	3
CPI	Consumer Prices	CPI: all items less food	3
CPI	Consumer Prices	CPI: all items less food and energy	3
CPI	Consumer Prices	CPI: all items less shelter	3
CPI	Consumer Prices	CPI: all items less medical care	3
GDP & Income	GDP - release	Real GDP growth (annualized quarterly change)	0
GDP & Income	GDP - detail	Sales: Mfg & Trade : Total (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Mfg, total (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Mfg, durables (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Mfg, nondurables (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Merchant wholesale (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Merchant wholesale, durables (mil of chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Merchant wholesale, nondurables (mil chained 96$)	2
GDP & Income	GDP - detail	Sales: Mfg & Trade : Retail trade (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Total (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Mfg (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Mfg, durables (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Mfg, nondurables (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Merchant wholesale (mil of chained 96$)	2
GDP & Income	GDP - detail	Inventories: Mfg & Trade, Retail trade (mil of chained 96$)	2
GDP & Income	Personal Income	Real disposable personal income	2
GDP & Income	Personal Income	PCE: Total (bil of chained 96$)	2
GDP & Income	Personal Income	PCE: Durables (bil of chained 96$)	2
GDP & Income	Personal Income	PCE: Nondurables (bil of chained 96$)	2
GDP & Income	Personal Income	PCE: Services (bil of chained 96$)	2
GDP & Income	Personal Income	PCE: Durables - MVP - New autos (bil of chained 96$)	2
GDP & Income	Personal Income	PCE chain weight price index: Total	3
GDP & Income	Personal Income	PCE prices: total excl food and energy	3
GDP & Income	Personal Income	PCE prices: durables	3
GDP & Income	Personal Income	PCE prices: nondurables	3
GDP & Income	Personal Income	PCE prices: services	3
Housing	Manufactured Homes	Mobile homes – mfg shipments (thous)(SA)	2
Housing	New Residential Sales	New 1-family houses sold: Total (thous)	2
Housing	New Residential Sales	New 1-family houses – months supply @ current rate	2
Housing	New Residential Sales	New 1-family houses for sale at end of period (thous)	2

Block Name	Release	Series	Transformation
Surveys 1	Chicago Fed MMI Survey	Chicago Fed Midwest Mfg Survey: General activity	2
Surveys 1	Consumer Confidence Index	Index of consumer confidence	1
Surveys 1	Michigan Survey of Consumers	Michigan Survey: Index of consumer sentiment	1
Initial Claims	Claims	Avg weekly initial claims	2
Interest Rates	Freddie Mac	Primary market yield on 30-year fixed mortgage	1
Interest Rates	Selected Interest Rates	Interest rate: federal funds rate	1
Interest Rates	Selected Interest Rates	Interest rate: U.S. 3-mo Treasury (sec. Market)	1
Interest Rates	Selected Interest Rates	Interest rate: U.S. 6-mo Treasury (sec. Market)	1
Interest Rates	Selected Interest Rates	Interest rate: 1-year Treasury (constant maturity)	1
Interest Rates	Selected Interest Rates	Interest rate: 5-year Treasury (constant maturity)	1
Interest Rates	Selected Interest Rates	Interest rate: 7-year Treasury (constant maturity)	1
Interest Rates	Selected Interest Rates	Interest rate: 10-year Treasury (constant maturity)	1
Interest Rates	Selected Interest Rates	Bond yield: Moodys AAA corporate	1
Interest Rates	Selected Interest Rates	Bond yield: Moodys BAA corporate	1
Financial	Foreign Exchange Rates	Nominal effective exchange rate	2
Financial	Foreign Exchange Rates	Spot Euro/US (2)	2
Financial	Foreign Exchange Rates	Spot SZ/US	2
Financial	Foreign Exchange Rates	Spot Japan/US	2
Financial	Foreign Exchange Rates	Spot UK/US	2
Financial	Foreign Exchange Rates	Spot CA/US	2
Financial	Price of Gold	Price of gold ($/oz) on the London market (recorded in the p.m.)	3
Financial	NYSE	NYSE composite index	2
Financial	NYSE	NYSE : industrial	2
Financial	NYSE	NYSE: utilities	2
Financial	S&P	S&P composite	2
Financial	S&P	S&P dividend yield	2
Financial	S&P	S&P P/E ratio	2
Financial	Wilshire	Wilshire composite index	2

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